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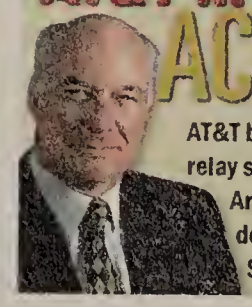
MAY 25, 1998 VOLUME 15, NUMBER 21

NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING



AT&T in ACTION

AT&T bolsters frame relay services; CEO Armstrong opens door to RBOCs. Stories, page 8.

Pager outage leaves managers in the lurch

By Sandra Gittlen

TROUBLE in the SKY

For network managers, a silent pager meant good news — until last week.

A satellite servicing more than 80% of the nation's 45 million pagers went on the blink last Tuesday, cutting off the primary means many net managers use to be notified about troubles on their nets.

"We didn't even know that the pagers were down, so we couldn't go into emergency response mode," said David Brandon, director of new product services at SBC Communications, Inc. in Dallas.

See **Satellite,** *page 72*

MORE ONLINE

- Details on the outage from the satellite's owner
- A video explanation of the problem

www.nwfusion.com

Grocer bags satellite net

By Tim Greene
Scarborough, Maine

TROUBLE in the SKY

When the Galaxy IV satellite went on the fritz last week, it took down pager service for millions across the country. But Hannaford Bros. Co. had a much bigger problem.

"I was riding to work in the morning, and I heard the news that all the pagers and beepers in the country were down. I said, 'Well, that's pretty funny.' Then I realized that we were on the same satellite," said Bill Homa, IT director for Hannaford.

As a result, the grocery giant lost the satellite links between company headquarters and its 148 retail stores. For many of the stores, the 19.2K bit/sec satellite link was the only way to move daily sales data to the main office.

But luck was on Homa's side. It just so happened that the $2.7 billion company was in the process of installing a T-1 ATM landline network for 46 of its combination supermarket/drug stores.

Homa now had a choice, at least when it came to the 46

See **Hannaford,** *page 72*

World TEST ALLIANCE Microsoft Site Server 3.0:

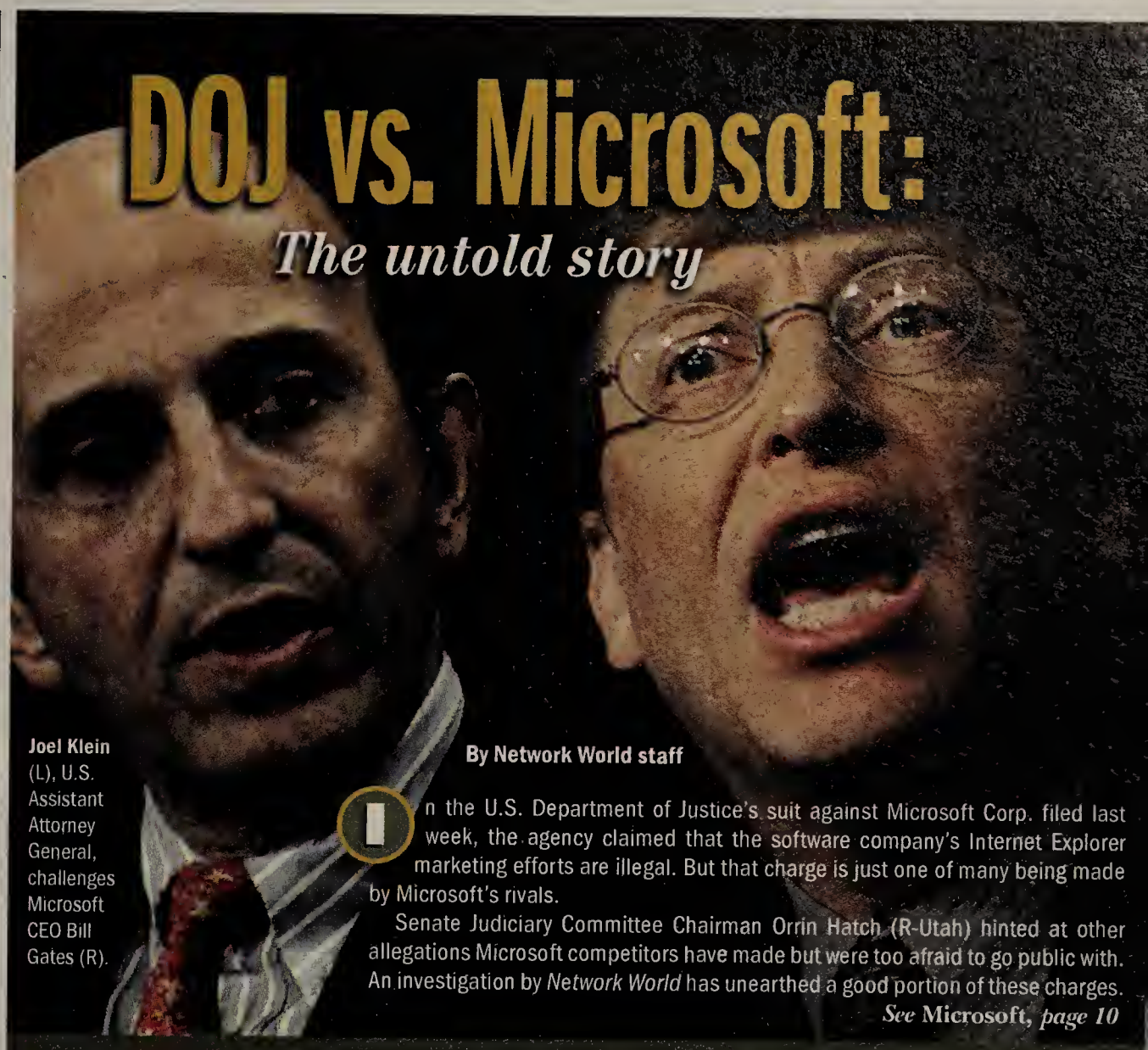
A complete Web server management tool at a reasonable price.

By Mark Gibbs

Comprehensive and enormously powerful.

That, in a nutshell, sums up our experience with Microsoft Corp.'s Site Server 3.0, a tool kit that includes everything Web site administrators need to manage their largest sites. In particular, it stands out for the strength and breadth of its administration and reporting tools.

See **Review,** *page 53*



DOJ vs. Microsoft: *The untold story*

Joel Klein (L), U.S. Assistant Attorney General, challenges Microsoft CEO Bill Gates (R).

By Network World staff

In the U.S. Department of Justice's suit against Microsoft Corp. filed last week, the agency claimed that the software company's Internet Explorer marketing efforts are illegal. But that charge is just one of many being made by Microsoft's rivals.

Senate Judiciary Committee Chairman Orrin Hatch (R-Utah) hinted at other allegations Microsoft competitors have made but were too afraid to go public with. An investigation by *Network World* has unearthed a good portion of these charges.

See **Microsoft,** *page 10*

ALSO INSIDE:

- Q&A: Dissecting the DOJ lawsuit. Page10.
- Users divided on government action. Page 11.
- Timeline: Key lawsuits in recent Microsoft history. Page 10.

AP PHOTOS: RON EDMONDS (L), SUZANNE PLUNKETT (R)

Tivoli touts service mgmt.

By Jim Duffy
Orlando

Tivoli Systems, Inc. last week outlined upcoming product developments that will go a long way toward filling out the company's service management offerings.

At the Planet Tivoli conference here, the company also discussed a new edition of the Tivoli Management Environment software — TME 10 3.6 — that will be released this summer.

For users, the new products will make Tivoli's TME 10 more of an overarching enterprise IT service manager, rather than just a system and software deployment and event manager. The new products should also make it easier for users to deploy and implement Tivoli management applications.

See **Tivoli,** *page 70*

MITCH O'CONNELL

Browser bloat

Browsers started life nice and trim, neat little packages tailored to provide only the most basic communications and navigational functions. As they grow in size and complexity, we've got to ask: Are we squandering the browser advantage?

Also Inside:

- Handbook: Browser sensing
- Review: Internet monitoring tools
- Advertising on Intranets


onw

The combining of DIGITAL and Compaq will put our customers on the express track to the future. When our companies get together, our customers will get a single supplier with undisputed leadership across many of today's most important information technologies. Fact is, no one will be able to match us in Windows NT.® And no one has anything that rivals the sheer power of DIGITAL UNIX,® OpenVMS™ or Alpha. Which means, for everything from Internet commerce to aerospace, telecommunications to finance, our customers will be able to come to us for the widest, most popular choices of Intel-based computing solutions, *and* the most tested and trusted 64-bit solutions. (Call it one-stop shopping that can help make you unstoppable.) Find us at www.digital.com/onward. And get ready to win in a networked world.

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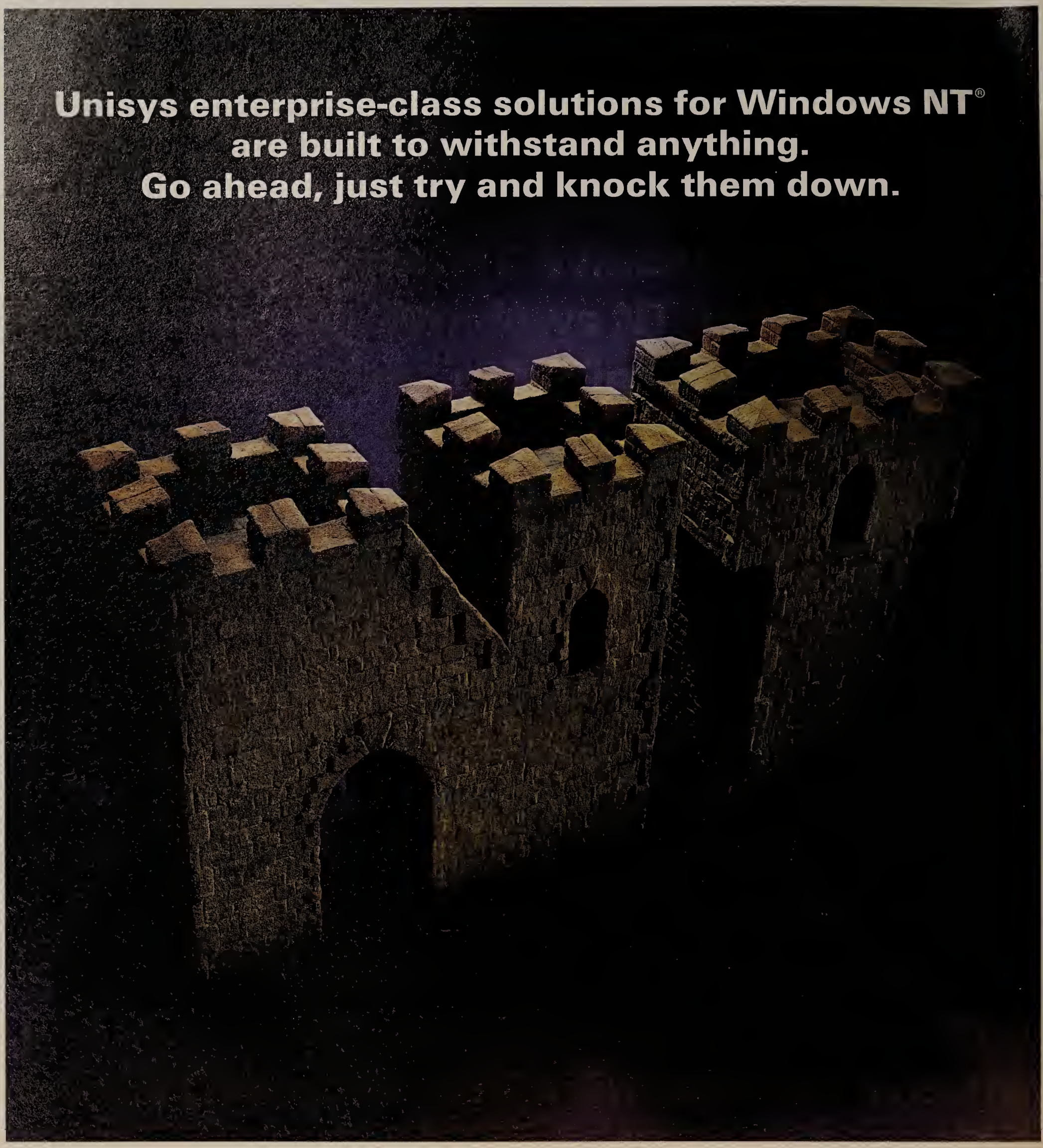


Unisys-deployed Microsoft® Windows NT systems are virtually fail-safe. So they're the perfect solution for mission-critical operations such as a 911 dispatch system. Unisys enterprise-class servers feature redundant hardware, intelligent error handling, and a choice of clustering solutions. And our expertise in creating and supplying enterprise-class NT solutions remains exceptional. That's why Microsoft has teamed up with Unisys to create the Unisys/Microsoft Enterprise Partnership—an alliance designed to help customers capitalize on NT as an anchor for highly robust solutions. Stop by our Web site to find out more.

UNISYS

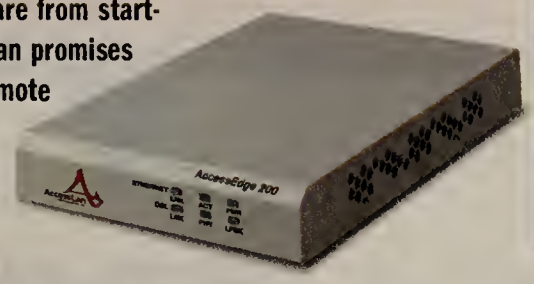
www.unisys.com/ent

THE RIGHT STUFF

Mobile Automation's RightState software uses corporate e-mail systems to manage remote PCs. Page 24.

BOOSTING BANDWIDTH

New hardware from start-up AccessLan promises to boost remote access bandwidth. Page 21.



SERVICE PROVIDER

President of GTE Internetworking Paul Gudonis reviews the ISP's performance and offers a glimpse of future services. Page 27.

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Are browsers getting too big for their britches?

***IntraNet* starts after page 38.**

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FEATURES

REVIEW: MICROSOFT SITE SERVER 3.0 *A complete Web server management tool at a reasonable price.* Page 1.

GOOD NEWS FOR TOKEN RING: *Switch functionality and performance soar, and at least some vendors are ready to make good on high-speed promises.* Page 45.

HEAD-TO-HEAD: ARE VPNs READY FOR PRIME TIME? *Bay's Pincince (left) says they're OK for remote access, but Nortel's Rybczynski warns against backbone use.* Page 43.

PHOTO RIGHT: MARIE-LOUISE DERUAZ

FIND IT ON FUSION

To quickly get to any online info referenced in *Network World*, enter its DocFinder number in the input box on the home page.

NetworkWorld Fusion

www.nwfusion.com

This Week

Only on Fusion

Keeping Current. It was the Week that Made Fred McClimans' Head Spin. From the Microsoft suit to spinning satellites to Charles Wang's expanding pile o' cash, McClimans was kept busy, busy, busy trying to keep up with it all. **DocFinder: 7238**

VPNs. Are they ready for prime time? Our latest Fusion Face-off pits Tom Pincince of Bay Networks, who argues that VPNs are the perfect solution for remote access, against Tony Rybczynski of Nortel, who says they're really only useful for small shops. What do you think? Read their opening statements, then jump in with your comments. **DocFinder: 7228**

SLAs. Thinking about service-level agreements for your network? We've assembled an archive of articles that look at SLAs on the wide area and in policy-based network management systems. **DocFinder: 7235**

HOW TO GET ONTO NETWORK WORLD FUSION

Click on Register on the home page and follow the instructions. Subscribers, keep your NWF number – highlighted on the front cover's mailing label – handy during registration. Nonsubscribers must fill out an online registration form.

How to contact us

WRITE: Network World, 161 Worcester Road, Framingham, MA 01701; **CALL:** (508) 875-6400; **FAX:** (508) 820-3467; **E-MAIL:** nwnews@nww.com; **CIRCULATION:** (508) 820-7444; nwcirc@nww.com; **STAFF:** See the masthead on page 14 for more contact information; **REPRINTS:** (612) 582-3800.

.WORK THE
WEB™

LOvE AND DEAtH in Akron, Ohio.

The pharmaceutical sales rep is dead. Exhausted. Dog meat. Lying on the bed, he thinks about his day. His flight was delayed two hours. He went into the club lounge and connected to [1](the company intranet to review shipping status on pending inventory) via the Web. He [2](e-mailed) his customers to inform them their deliveries would arrive early. He lugged his carry-on to the gate. He wedged himself into a coach seat. He arrived at his sales call just in time, only to find his client was running an hour late. He tweaked his presentation, checking his competitors' Web sites, and [3](incorporated key points into his pitch). He made the presentation. He went to the hotel and the smiling clerk gave him a smoking room with twin beds instead of the non-smoking king he had reserved. He turned on a rerun of *Love, American Style.* He connected to the [4](contact management system), updated his customer file and sent a call report to the global sales team. He connected to the company benefits intranet and [5](calculated the balance in his 401k plan). It was up 4.5%. He falls asleep and sleeps soundly until his next wake-up call. At 5:30 a.m.

THE [6](BEST PARTS) OF HIS DAY WERE MADE POSSIBLE BY LOTUS.

[1]Lotus Domino™ Web Application Server with IBM DB2® UDB back-end. [2]Lotus Notes® mobile messaging. [3]Notes replication. [4]Domino-based Contact Management application developed by Lotus Business Partner. [5]Lotus eSuite™ spreadsheet applet. [6]www.lotus.com/worktheweb.

Lotus

An IBM Company

News briefs, May 25, 1998

On the auction block?

Last week unconfirmed reports circulated that MCI Communications Corp. is considering selling parts of its Internet business. The reported sale could include parts of the carrier's domestic IP backbone.

MCI may feel the need to make a deal in light of the company's attempt to gain regulatory approval for its pending merger with WorldCom, Inc. If a sale took place, the merged company would retain its commercial and residential Internet access customers, as well as the Internet backbones of several WorldCom subsidiaries, notably UUNET Technologies, Inc.

An MCI spokesman declined to comment, but AT&T Chairman and CEO C. Michael Armstrong revealed at AT&T's annual meeting last week that he would be an interested buyer. "AT&T, being a much smaller player in that particular arena, would be very interested in participating in that engagement," he said.

New protocol to take a bite out of wireless market

A group of industry heavyweights last week announced plans to develop a wireless transmission protocol that will let mobile computing and telecommunications devices transmit data using short-range radio technology.

The technology, code-named Bluetooth, will enable voice and data to travel at speeds of up to 1M bit/sec between mobile devices, including phones and handheld computers.

Backers include L.M. Ericsson Telephone Co., Nokia Corp., IBM, Intel Corp. and Toshiba Corp. A Bluetooth specification will be released in the third quarter, with products expected by mid-1999.

Bay's really big concentrator

Bay Networks, Inc. next week will announce a high-density access concentrator that aggregates thousands of leased lines into a high-speed pipe to an Internet core switch or router.

"Big Access Concentrator (BAC)," as Bay watchers refer to it, supports fractional T-1, T-1 and T-3 access and OC-3 and OC-12 ATM and packet-over-Synchronous Optical Network (SONET) backbone connections.

BAC is the first Bay product to incorporate the company's 1 million packet/sec Route Switch Processor Application Specific Integrated Circuits, which Bay unveiled a year ago. BAC will ship in the fourth quarter. Pricing was unavailable.

Promises of an interoperable ATM future

A group of ATM vendors — including Ascend Communications, Inc., Digital Link, Nortel, Sentient Networks, Inc. and Sonoma Systems, Inc. — last week announced a push to make their ATM inverse multiplexing (AIM) gear interoperable.

AIM is the standard defining how to drop large data streams onto multiple T-1 lines and treat those streams as a single large link. Because implementing a standard does not necessarily mean one vendor's equipment will work with another's, interoperability testing is needed, the group said.

AIM vendors promised to make customer premise equipment interoperate with carrier equipment so customers won't have to buy new hardware if they switch carriers.

The wacky Web world

In a move most industry experts deemed "flaky" at best, Zapata Corp. last week submitted a $1.7 billion merger proposal to Web directory and search firm Excite, Inc.

Zapata, which last year made more than $117 million selling fish oil and sausage materials, said it wanted to use the merger to help the firm enter the burgeoning Internet and electronic commerce market. Excite executives immediately rejected the deal. Wall Street analysts also dismissed the merger offer mostly because Zapata has a market capitalization of about $258 million, barely one-fifth of Excite's $1.3 billion.

AT&T enhances frame relay service

Delayed SLAs for frame service likely to take effect this week.

By David Rohde
Basking Ridge, N.J.

AT&T last week prepared for the imminent release of its new standard frame relay service-level agreement (SLA) by introducing a system to automatically track WAN performance.

The kicker: Users will have to pay $50 to $200 per site for the automated service. Those who don't buy the service will be required to file their own electronic trouble tickets if they want to claim financial penalties under the new SLA.

Called Frame Relay Plus, the new AT&T service is based on an enhanced DSU/CSU from Visual Networks, Inc. of Rockville, Md., known as the Analysis Service Element (ASE). Visual Networks is a rapidly growing vendor of WAN service-level management systems that let users measure carriers' private line, frame relay and ATM network availability.

Under Frame Relay Plus, the ASE sits at a customer site and is attached via a frame relay permanent virtual circuit, dubbed the Management PVC, to an AT&T network management center. The ASE performs end-to-end monitoring of frame relay access lines and PVCs to isolate faults and enable quicker remote or on-site repair.

AT&T customers can choose among three flavors of Frame Relay Plus (see graphic). Regardless of the option chosen, Visual Networks will install its Performance Archive Manager (PAM) at the AT&T site. PAM is a server that archives historical data from all of a user's ASEs into a SQL database. The database provides the statistics needed to measure AT&T's and the user's network

See **AT&T,** *page 72*

New options to think about

AT&T is offering three service levels in its new Frame Relay Plus service:

Level	Name	Description
Level 1	DSU/CSU Provisioning and Maintenance	Visual Networks' ASE placed on each customer site for end-to-end monitoring
Level 2	Network Planning and Performance Reporting	ASE placed on site and periodic performance reports generated from partitioned database at AT&T
Level 3	Troubleshooting and Real-Time Support	ASE placed on site and users get client software to link to AT&T performance database for real-time measurement

Armstrong invites RBOCs to sell AT&T long distance

C. Michael Armstrong believes that if you can't beat 'em, join 'em.

In a startling reversal of AT&T policy since the enactment of the Telecommunications Act of 1996, AT&T CEO Armstrong last week announced that AT&T would be willing to let regional Bell operating companies offer AT&T long-distance service to their customers.

The move would effectively let the RBOCs into the long-distance business, at least for residential customers — something against which AT&T has fought tooth and nail for nearly two and a half years.

PICKING UP THE PACE

Major new commitments made by AT&T CEO C. Michael Armstrong at AT&T's annual meeting last week:

- Offer to let regional Bell operating companies resell AT&T services.
- Commit to serve apartment buildings as well as office buildings with TCG facilities.
- Add $325 million in Internet capital spending this year.
- Expand wireless networks with additional $1 billion investment.

Armstrong's announcement at AT&T's annual meeting — backed by letters to each of the RBOC CEOs — came despite the fact that AT&T and other carriers recently sued Ameritech Corp. and US WEST, Inc. for doing almost exactly the thing he's proposing. Ameritech and US WEST want to resell long-distance services for Qwest Communications Corp.

Armstrong made the offer after AT&T failed to win a temporary restraining order from a federal court blocking the Ameritech and US WEST deals with Qwest. The two RBOCs — neither of which yet has regulatory permission to enter the long-distance market — have claimed that their deals are legal because they are not "providing" long-distance service, only acting as a sales agent for Qwest. In prepared statements, several RBOCs said they would study the offer but made no commitments one way or the other.

Steve Sazegari, president of the telecom consulting firm Tele.Mac in Foster City, Calif., said Armstrong made the overture because he sees no realistic chance of gaining access to consumer and small-business local loops in 1998 or 1999.

"AT&T is saying, 'I'm giving up going out there and providing one-stop shopping [to consumers].' They're saying to the RBOCs, 'You go out and bundle the service because I can't get the local loop,' " Sazegari said.

—David Rohde

Wireless start-ups draw heavy venture money

Quarterly Price Waterhouse/Network World survey also finds electronic commerce firms going strong.

By Chris Nerney

If money is any indication — and it is — this is becoming a wireless world.

For the third consecutive quarter, start-ups developing wireless communications products and services represented the most attractive high-tech investment category for venture capitalists, according to the latest Price Waterhouse/Network World Venture Capital Survey.

Fifteen wireless start-ups received venture funding in the first quarter of 1998, one less than the number of new wireless firms funded in last year's fourth quarter.

Among the wireless vendors landing venture funding in the first quarter were the following:

- Comm Site International, Inc. of Vienna, Va. ($21.9 million), a provider of site acquisition and development and facilities management services for wireless communications vendors
- SpectraSite Communications, Inc. of Cary, N.C. ($17 million), a company that builds and leases wireless communications towers
- WaveSpan Corp. of Mountain View, Calif. ($12 million), a provider of broadband wireless Internet access
- SignalSoft Corp. of Boulder, Colo. ($9.6 million), a provider of wireless location software and services

Total venture funding for network- and Internet-related start-ups in the first quarter was off slightly from the previous two quarters. The survey shows that 161 companies received $921 million in the first quarter, compared with 175 companies receiving $1.03 billion in the fourth quarter last year, and 168 companies getting $930 million in the third quarter last year.

Overall, first-quarter venture funding was $3.6 billion, slightly less than the fourth quarter's record $3.7 billion but 54% more than the total for last year's first quarter.

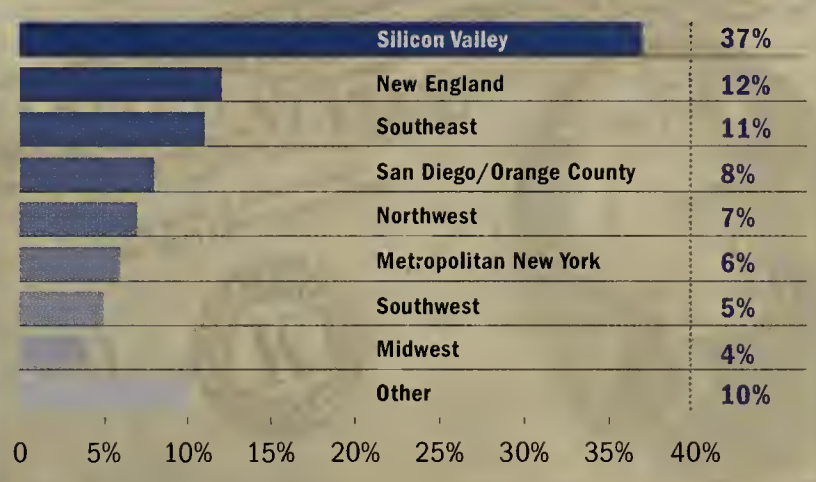
While the overall high-tech investment market shows signs of reaching a plateau, telecom investments — including wireless technology — continue to sizzle, according to Kirk Walden, director of the quarterly Price Waterhouse survey.

"In the first quarter of 1996, telecom and wireless investments totaled $133 million," Walden said. "In Q1 '97 they were $202 million, and last quarter they were $397 million."

Electronic commerce remained another popular investment area for venture capitalists in the first quarter, with 10 start-ups landing funds. Big winners included Web sales/advertising software vendor Narrative Communications, Inc. of Waltham, Mass. ($5 million); Asterion, Inc. of Kent, Wash. ($3.2 million), which provides a range of network services to health care organizations. ■

WHERE THE MONEY WENT

A total of 161 network- and Internet-related start-ups received venture funding in the first quarter. Here's where the companies are located:



SOURCE: PRICE WATERHOUSE, BETHESDA, MD.

MONEY MAGNETS

The top venture funding recipients among network companies in the first quarter:

Company	Type of business	Investment round	Amount (in millions)
Avici Systems Chelmsford, Mass.	High-performance backbone routers and switches	Second	$52.3
Unwired Planet Redwood Shores, Calif.	Handheld wireless datacom system architecture	Fourth	$33
iVillage New York	Producer of branded online communities	First	$30.5
Savvis Communications St. Louis	Corporate Internet backbone service	Third	$30
Argon Networks Littleton, Mass.	Routers and switches for Internet backbone providers	Second	$26.5

A sampling of network companies that received initial/seed funding in the first quarter:

Company	Type of business	Amount
Telestream Nevada City, Calif.	Real-time video, audio broadcast device	$3 million
ConvergeNet San Jose, Calif.	Network storage	$2.3 million
Arabesque Communications Redwood City, Calif.	Voice-activated message retrieval over wireless	$1.2 million
Moia Technologies San Francisco	Web-based auction software	$750,000
Net Earnings Burlingame, Calif.	Web-based financial services for small businesses	$560,000
Mor Com Newtown, Pa.	Broadband Internet services platform	$150,000
ITango Seattle	Web-based self-service applications for higher learning and insurance industries	$100,000

SOURCE: PRICE WATERHOUSE, BETHESDA, MD.

For complete survey results from the two most recent quarters, go to www.nwfusion.com DocFinder: 7229.

Centrax to boost NT security

By Ellen Messmer
San Diego

Start-up Centrax Corp. this week will make its debut with Windows NT software that can detect file misuse and network intrusions as well as automate responses to such incidents.

The company's Entrax suite builds on top of NT's inherent security features. If an end user employs NT security features to lock out others from certain files, Entrax monitors those files for intrusions and then alerts net administrators about any suspicious activity.

Entrax consists of a central command console and agents that run on any workstation or server being monitored. The agents feed the console information on the security status of the computers. The console can be configured to shut down a computer in the event of a problem and generate a pager alert or e-mail to notify a net administrator. Entrax keeps a detailed audit trail of incidents after the software spots intruders, according to beta users.

"It certainly can catch problems," said Vance Johnson, project manager at Geo Referencing Systems, Inc., a Canadian producer of municipal maps detailing pipelines and electrical grids.

Geo, which is testing Entrax on one server and nine workstations, has suffered a few minor hacker incidents in the past. The Frederickton, New Brunswick, firm wants to be able to prosecute hackers. To that end, Entrax can generate audit reports that include legal summaries, Johnson said.

Centrax founders, *(left to right) Tom Trebelhorn, Harry Schessel and Paul Proctor, are former SAIC employees.*

"Entrax tracks what workstation a file was accessed from," Johnson said. "But just because I logged in under someone else's identity is not sufficient to prosecute someone in Canada . . . But it would be enough to pursue an investigation."

Centrax was founded a year ago by former SAIC, Inc. engineers with backgrounds in computer security.

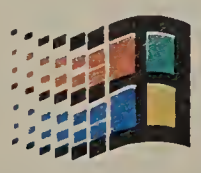
✆ Centrax: (619) 546-2400

Great lawsuits in Microsoft history

1989: Apple Computer vs. Microsoft.
Then Apple chief John Sculley sues Microsoft, claiming Windows violated Macintosh user interface copyrights. But Microsoft already had a license to the technology stemming from an earlier agreement it made to develop Macintosh applications.

1994: Justice Department vs. Microsoft.
In 1994, Microsoft signs a consent decree designed to eliminate the tying of products to Windows. Three years later, the Justice Department sues, claiming that the tying of Windows and Internet Explorer violated the decree.

1994: Stac vs. Microsoft.
Stac chief Gary Clow claims that Microsoft officials told him to license his technology to them for free, or they would destroy it with software of their own. Clow won $126 million. Microsoft negotiates, buying a large chunk of Stac stock and filling Clow's war chest with cash.



1995: Wang vs. Microsoft.
Wang Laboratories claims that Microsoft's OLE (an object technology now dubbed ActiveX) violated long-standing Wang patents. Microsoft settles by making Wang the preferred imaging software vendor for Windows, and bundling a Wang image viewer with Windows.

1996: Caldera vs. Microsoft.
Caldera sues Microsoft, charging that the software company illegally tried to limit the market for MS-DOS rival DR-DOS. Who is the man behind Caldera? Longtime Microsoft nemesis and former Novell head honcho Ray Noorda.

Noorda

1997: Borland vs. Microsoft.
Borland International (now Inprise) sues Microsoft for stealing employees. Microsoft's aggressive pricing tactics put Borland in a world of hurt, and Microsoft exploited the situation by hiring many of Borland's brightest. The parties settle the suit.

1997-1998: Sun vs. Microsoft.
Sun files a lawsuit in October 1997, claiming that Microsoft violated its Java licensing agreement by shipping a Java-incompatible version of Internet Explorer 4.0. Sun later sues Microsoft over Microsoft's plan to ship Windows 98 without full Java support.

Last week: Justice Department and 20 states vs. Microsoft.
The focus here is Microsoft's browser marketing tactics.

PHOTO

Microsoft

Continued from page 1

Microsoft practices that concern rivals and users include the following:

- Allegedly unfair integration of Windows NT and BackOffice applications
- Approach to directories
- Handling of its operating system and application APIs
- Java strategy
- Treatment of operating system rivals, such as Caldera, Inc. and Taligent, Inc.

While last week's Justice Department action homed in on just Windows 95 and 98, NT also is at the center of a mounting pile of complaints.

Microsoft's approach to BackOffice could pose a problem for Novell, Inc., according to one Novell official. Because the NT and BackOffice teams are part of the same company, the developers of NT's Active Directory Services (ADS) get insight into the guts of Microsoft Exchange, critics contend.

In fact, ADS essentially is an operating system feature, but it will also become the directory system for Microsoft Exchange, which is battling neck and neck with Lotus Notes in the groupware/e-mail market.

Novell, on the other hand, has had to reconstruct many of Exchange's APIs to support Microsoft's messaging system under Novell Directory Services for NT, one insider said. The end result may be that ADS, built into Exchange, will be a superior way to manage the e-mail system — essentially locking Novell out of a key market segment. A Microsoft spokesperson argued that Novell has the same access to APIs as any developer. "There are no secret meetings with developers at Microsoft," the spokesperson said.

While Windows NT does not currently enjoy a workstation or server monopoly, NT will ultimately replace the Windows 3.X and 4.X families and could thus develop such a monopoly, observers noted.

Bundling blues

Giga Information Group, a Cambridge, Mass., consultancy, has been tracking Microsoft's bundling strategy. Senior Analyst Randall Kennedy said Microsoft is abusing the Windows NT software licensing and upgrade process.

According to Kennedy, the NT Service Pack releases ought to be for maintenance, such as bug fixes. Instead, the Service Packs add lots of important new features to the operating system that normally would be included in a point release or upgrade. Then Microsoft releases new versions of the application that use the new features.

The Microsoft spokesperson argued that "developers have the same access to fixes in service packs as Microsoft."

Database vendors are also concerned about NT. "They're now starting to do with NT exactly what they've been doing with the Windows desktop — they're bundling more and more of what is provided by other software companies into NT and BackOffice," said Mitchell Kertzman, chairman and president of Sybase, Inc.

"The most egregious example is Microsoft Transaction Server. When we announced our Jaguar transaction server, one Microsoft exec called and bullied me and tried to get me to back off on the product. I declined. Two weeks later they announced that [Microsoft Transaction Server] was now bundled with NT," Kertzman related. "Someone talked to me right after [the Microsoft executive] called: I said [to that person], 'I think I just talked to the godfather and he told me to stop selling drugs on his street corner.'"

According to Kertzman, Microsoft is using its monopolies in desktop operating systems and productivity software to drive NT and BackOffice. "I've been told that if you are a Microsoft Select Customer — [and]

Justice Dept. vs. Microsoft: The nuts and bolts

Q&A

With all the rhetoric swirling around Microsoft Corp.'s legal situation, it can be tough to figure out just what all the fuss is about. Here's our take on the fundamental issues at hand.

What actually happened?

Unless you were hiding under a PC somewhere, you probably know the U.S. Department of Justice and 20 individual states filed suit last Monday against Microsoft. They charged that Microsoft violated U.S. antitrust laws in the way it promotes the Internet Explorer browser. The suits were filed after negotiations with Microsoft broke down.

What are the federal and state governments seeking?

The suits, as they stand, are fairly narrowly defined. The federal and state governments essentially want to create a level playing field for Netscape Communications Corp. and its Navigator browser. The suits ask that Microsoft either take Internet Explorer capabilities out of Windows 98 or bundle a copy of Navigator with every edition of Windows 98 that ships. The federal and state governments also are demanding that Microsoft stop crafting contracts with ISPs and Internet content providers that favor Internet Explorer and handicap Navigator.

The governments are also asking that PC makers be given control over the opening screen on their computers.

How is the states' action different than the federal government's?

The action by the 20 states is nearly identical to the federal action, except the states also suggest that Microsoft stop selling Microsoft Office to PC makers on a per system basis. (Currently, vendors pay Microsoft for every unit shipped regardless of whether Office is installed.) The states argue that the current situation limits the ability of productivity software competitors to reach bundling deals. The states are also against Microsoft's practice of bundling its Outlook e-mail software with its operating systems.

Is there a simple and fundamental principle behind the governments' actions?

Yes, it is called monopoly leveraging. It can be illegal to use a monopoly in one area to gain a monopoly in another. According to the suits, Microsoft is using its 90% or so market share in desktop operating systems to gain a monopoly in the browser market.

What is Microsoft's response?

Microsoft says the company is simply innovating and meeting customer demands by integrating browsing and other capabilities into Windows.

Does the lawsuit change anything immediately?

No. It is just a lawsuit that hap-

you standardize on the Microsoft Office suite — you can get a better price on BackOffice: this makes it very compelling for customers. But it starts with the MS Office software.

"What's the obvious connection between Office and Transaction Server? None," Kertzman said. Microsoft denies linking sales of Office and BackOffice.

Microsoft also bundles its Internet Information Server Web server, which competes with software from Netscape Communications Corp. and others, with the core NT operating system.

Kertzman suggested a Microsoft divestiture. "In general: you've got to separate the monopoly business from the other businesses they're linking to — the OS vs. non-OS products," he said.

The divestiture issue has been raised in the past, with Microsoft being accused of using its APIs to give its own developers unfair inside access. This was an issue with Windows 3.1 and Microsoft Office developers, observers said.

And according to the Justice Department filing last week, Microsoft officials met with Netscape officials two years ago and proposed that Netscape stay out of the Windows browser market. In return, Microsoft reportedly agreed to stay out of the non-Windows browser market, according to Marc Andreessen, executive vice president of Netscape.

The reward for Netscape's cooperation? Preferential access to Microsoft APIs, Andreessen claimed. Microsoft Chairman Bill Gates, however, vehemently denied the claim, calling it "an outrageous lie."

The Java issue

Also prominent in the Justice Department complaint, but not part of the demands, are allegations that Microsoft has used its operating system dominance to thwart the spread of Sun Microsystems, Inc.'s Java programming language.

"Java is designed in part to permit applications written in it to be run on different operating systems," the complaint reads. "As such, it threatens to reduce or eliminate one of the key barriers to entry protecting Microsoft's operating system monopoly."

In its filing, the Justice Department quoted an internal Microsoft memo in which Group Vice President Paul Maritz emphasized the need to "fundamentally blunt Java/AWT momentum" to "protect our core asset, Windows."

There may be a simple legal way for the Justice Department to add items such as Java to its complaint, observers said.

"This suit is not about any particular product, such as Windows 95 or 98. It is on a particular action: tying," said Rebecca Lynn Eisenberg, an attorney, consultant and writer who regularly covers technology issues for the *San Francisco Examiner*. Eisenberg defined tying as using a monopoly in one market, such as operating systems, to take advantage of a monopoly in another market, such as browsers. "If the government pulls together enough evidence of the ways in which Microsoft used its monopoly in the OS market to gain unfair market advantage in the [NT] or [MS Office] markets,

See **Microsoft,** *page 70*

A sure bet, but which way?

"It's a slam-dunk winner for the Justice Department."

Ken Wasch, *president, Software Publishers Association*

Odds of government winning

90%

"How do you raise prices when your competitor's price is zero?"

Robert Levy, *senior fellow, Cato Institute*

Odds of government winning

5%-10%

pens to seek preliminary injunctive relief. This means the federal and state governments are seeking to have Microsoft change its business practices before the suit is completely decided in court. The lawsuit by itself does not have the power to change Microsoft's policies.

So how do the federal and state governments change Microsoft?

By using the courts. In fact, the next step is trial before a federal judge, in this case Thomas Penfield Jackson, who already ruled that Microsoft can't tie sales of Windows 95 to the distribution of Internet Explorer. As part of the upcoming trial, Jackson will decide whether to invoke the preliminary injunctive relief clauses that the Justice Department and individual states are seeking.

What does all this mean for NT?

Probably a lot. NT 5.0 is identical to Windows 98 in that the new edition of NT includes an integrated browser.

Is it possible that other product areas would be addressed in separate filings?

Absolutely. Microsoft's powerful position in the operating system market factors into nearly every business deal the company strikes. Competitors have been complaining up a storm about Microsoft's dealings.

So where does Windows 98 stand today?

Windows 98 is shipping on schedule for two reasons. First, the suit has no teeth until a court backs it. But more importantly, neither the feds nor states are seeking, at this time, to block the release of Windows 98.

They only asked that the browser be unbundled or that Navigator be included in each copy of Windows 98 (the states demand two other browsers be included).

Why didn't the governments try to stop Windows 98?

Microsoft has argued that the removal of the browser from Windows 98 would be time-consuming and difficult. With that in mind, the federal government said it did not want to delay the release of Windows 98 by forcing the removal of the browser. In the end, the feds did not want to "deny consumers the benefit of Microsoft's new operating system software."

How are large PC vendors reacting to the Microsoft situation?

They seem to be taking a 'What me, worry?' attitude to Windows 98. Dell Computer Corp., Compaq Computer Corp., Digital Equipment Corp. and IBM all plan to ship the operating system with their computers next month, as planned.

And at least one of the vendors doesn't seem to have a problem with Microsoft's insistence that its logo be the first thing appearing on a PC's screen when the device boots up. A Compaq spokesman said, "We are pleased with the current arrangements we have with Microsoft, and we're pleased with what comes up on first boot."

—Doug Barney

Users are divided over Microsoft's marketing power

By Chris Nerney, Marc Songini and John Cox

It is being accused by the U.S. Department of Justice and 20 states of being a monopoly.

Competitors have pelted it with a steady volley of lawsuits.

A legion of critics refers to its CEO as the antichrist.

You'd think the whole world was against big, bad Microsoft Corp., now embroiled in a full-fledged antitrust battle with the federal government.

But many IS professionals interviewed by *Network World* are genuinely conflicted over the Justice Department's action against the software giant, even as they acknowledge the dangers of Microsoft's excessive market muscle.

"We probably do need help against a company that gains an overbearing advantage," said Joe Greulich, IS manager at Roberts Express, Inc., an international courier service based in Akron, Ohio. "I don't know if Microsoft has reached that point."

Another network manager expressed no such ambivalence about the Justice Department's action.

"It's ridiculous for Microsoft to be in court for this," said Dean Thompson, manager of IT for Cleveland-based IS consultancy Berish and Associates. "When someone starts doing well, everybody else says, 'That's not fair.' "

"It's like telling Michael Jordan, 'Hey man, you can only score 15 points a game,' " he said.

Thompson particularly criticized the federal government's demand that Microsoft bundle Netscape Communications Corp.'s browser with the Windows 98 operating system. "That's insane. Any hardware vendor can prebundle whatever it wants," he said. "Let the OEM make that decision."

Phil Emer, associate director for advanced technology development at North Carolina State University, agreed. "I don't know why they want Microsoft to include Netscape as part of the operating system when the manufacturer generally gets every piece of free software he can find and loads it on my PC," he said.

"The DOJ's effort is overreaching and probably at least in some part politically motivated," said Hal Kuff, systems and network manager at Tesco Technologies, Inc. in Hunt Valley, Md.

Another network manager, Scott Davis of the Fred Hutchinson Cancer Research Center in Seattle, said Microsoft's practice of bundling NT and applications, as well as continually adding major new functions to the operating system in Service Packs, is not good for competition.

"The long-term impact of this is not good," Davis said. "Once a monopoly is in place, then generally the quality of service and products goes down and the price goes up. I don't put it past Microsoft to start raising prices."

Meanwhile, some network managers said there are better places to look than Redmond for potential monopolies. "When are they going to grab Cisco or 3Com?" Emer asked. "Those guys are into everything."

"I think Intel is a far bigger threat than Microsoft ever could be," Kuff said. ■

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THe CIO IS iN THE hot seat as the executive committee drills one department head after another on escalating costs. How are you going to [1](get the newly acquired subsidiary onto our e-mail system)? How are you going to [2](hold down your network administration head count) as you add hundreds of new users? How can you afford to [3](roll out new apps to the whole company)? It's like the Spanish Inquisition, but the food is worse. Her stomach rumbles from the dry turkey sandwich and yuppie water served at the start of the meeting as one committee member wakes up long enough to ask about the [4](Year 2000 problem) he saw on a CNN segment. "Not a problem, we have it covered," she replies. With an unforeseen compliment for completing the [5](global supplier extranet) project, she is excused. Exiting, she smiles at the beleaguered marketing director, who is about to be skewered because the company's celebrity pitchman has just appeared on the cover of a major supermarket tabloid.

THE [6](BEST PARTS) OF HER MEETING WERE MADE POSSIBLE BY LOTUS.

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Lotus

An IBM Company

Start-up preps e-comm suite

First piece of suite targets procurement.

By Ellen Messmer
San Jose, Calif.

Start-up RightWorks Corp. last week introduced the first component of its new Web- and Windows NT-based purchasing and financial management suite.

The software enables companies to set up electronic catalogs on their intranets that feature supplies available from trading partners. The software also connects to a customer's back-end databases and Enterprise Resource Planning (ERP) applications.

The company's first product in the suite, ProcureWorks, runs on an NT server also running the company's RightWorks Server software. The NT machine sits behind a private Web server and can be accessed by corporate buyers via a Web browser.

To purchase products, a buyer fills an electronic shopping basket on the RightWorks Server. Then the order request is routed across the corporate intranet for approval.

User authentication can be handled through password or digital certificates.

RightWorks enables customers to set up a "staging" server outside the corporate firewall that can be used by suppliers to deposit revised catalog data. RightWorks Server can then suck this data into the production catalog.

RightWorks has also begun work on an application called AssetWorks that gives managers a real-time view of their budgets by linking to back-end ERP programs. In addition, the firm is developing applications called ExpenseWorks, which provides a view of operational expenses, and TimeWorks, for submitting and managing time sheets. The three applications should be finished by early next year.

All of the applications will feature APIs that can be used by programmers to link the programs to back-end applications from the likes of Baan Co., Oracle Corp., PeopleSoft, Inc. and SAP AG, said RightWorks CEO and President Vani Kola.

A software engineer, Kola founded the firm in 1996 with private backers, including Stan Meresman, former chief financial officer at Silicon Graphics, Inc., and Suhas Patil, former CEO at Cirrus Logic, Inc.

Among the vendor's early customers is high-tech giant Applied Materials, Inc. of Santa Clara, Calif., which is in the process of rolling out ProcureWorks for use by its 16,000 employees. The company will use the software to buy office supplies via the corporate intranet.

One advantage of ProcureWorks is that it lets managers set norms for what items should cost, said Ash Munshi, a vice president at Applied Materials. This should help the company avoid overpaying for PCs and other items, Munshi said.

Like many new electronic commerce programs, ProcureWorks isn't cheap. It typically costs from $350,000 to $500,000.

✆ RightWorks: (408) 882-0350

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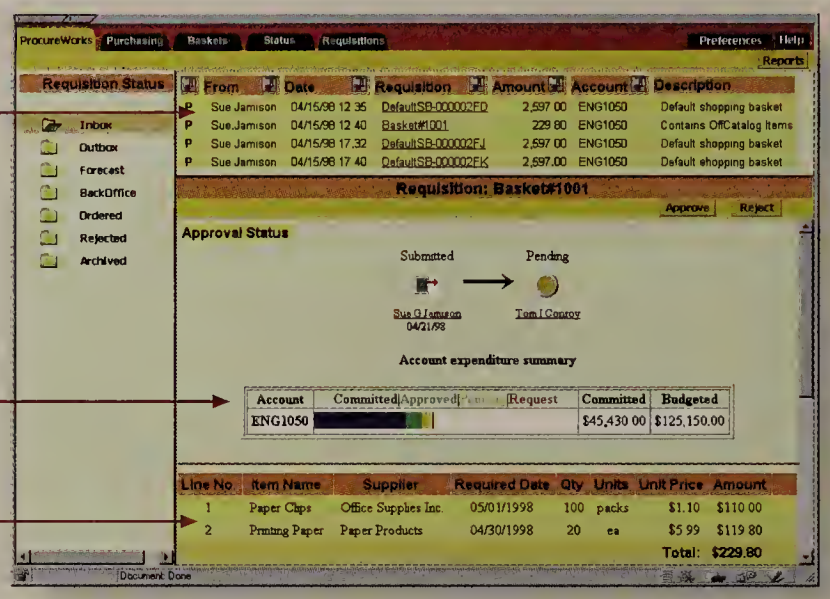

Lotus buys two firms, drops server prices

Company gobbles up collaboration software firms DataBeam and Ubique.

By Chris Nerney
Cambridge, Mass.

Lotus Development Corp. last week announced agreements to purchase two communications software companies as part of its strategy to offer real-time e-mail and collaboration tools that work over intranets and the Internet.

Lotus announced that it is buying DataBeam Corp., a Lexington, Ky. manufacturer of real-time conferencing and distance learning servers based on the International Telecommunication Union's T.120 standard.

Using Web browser or T.120 client software, such as Microsoft Corp.'s NetMeeting, corporate employees working with DataBeam's neT.120 Conference Server can share data and applications in real-time, brainstorm, and conduct presentations and product demonstrations for remote participants.

Lotus plans to incorporate DataBeam's products and technologies into Sametime, a group of client and server software products for real-time communication and collaboration.

Terms of the deal were not disclosed.

Lotus also said that it is acquiring Ubique, a Rehovot, Israel, software company. Ubique's software enables end users to be aware of which other online users are working in the same "virtual location," such as a Web page. Ubique's server software supports chat, instant messaging and other applications.

Financial terms of the deal were not disclosed. The acquisition is subject to regulatory approval.

Mike Zisman, Lotus' executive vice president of strategy, said products incorporating the DataBeam and Ubique technologies are expected to be released later this year.

In other Lotus news, company officials last week announced price cuts for the Domino Mail Server and standard Domino server.

Lotus will cut Mail Server's price from $995 to $695. The company is slashing the price for the standard edition, which runs on machines with up to four CPUs, from $3,495 to $1,795.

Both changes will be effective July 1. ■

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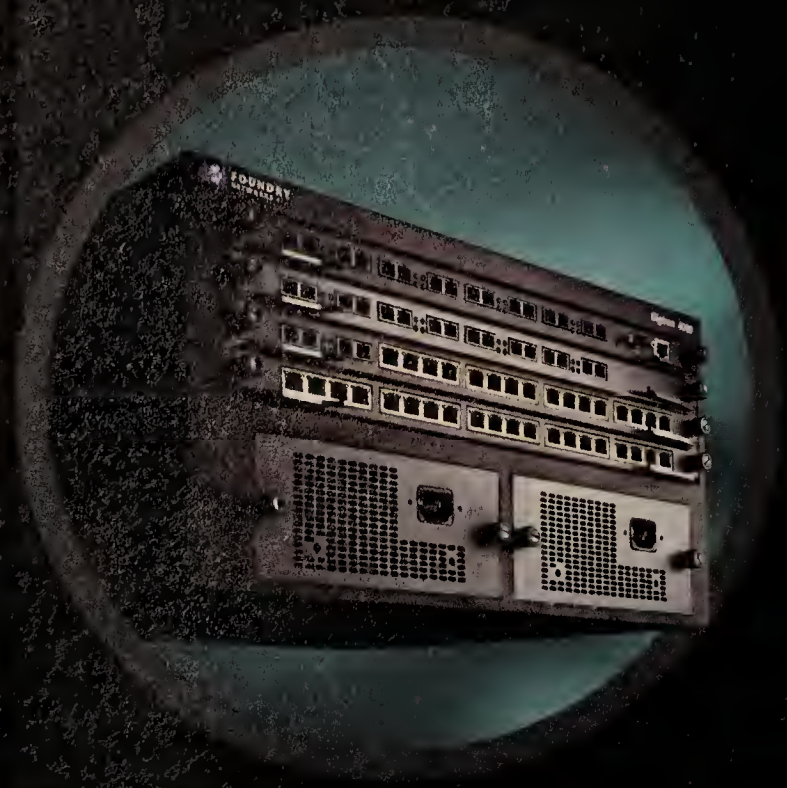

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Form: 9703

1 What is the principal business activity at your location? (check one only)

01. ☐ Manufacturing (other)
02. ☐ Finance/Banking
03. ☐ Insurance/Real Estate/Legal
04. ☐ Health Care Services
05. ☐ Hospitality/Entertainment/Recreation
06. ☐ Media/TV/Cable/Radio/Print
07. ☐ Retail/Wholesale Trade/Business Services
08. ☐ Transportation
09. ☐ Utilities
10. ☐ Education
11. ☐ Process Industries (Mining/Construction/ Petroleum Refining/Agriculture/Forestry)
12. ☐ Government (Federal/State/Local)
13. ☐ Military
14. ☐ Aerospace
15. ☐ Consulting (Independent)*
16. ☐ Carriers/Interconnects
17. ☐ Internet Service Provider (ISP)
18. ☐ Manufacturing (Computer/Communications/OEM)
19. ☐ Resellers of Computer/Network Products (VARs, VADs)
20. ☐ Systems/Network Integrators*
21. ☐ Distributors (Computer/Communications)*
22. ☐ Other *(please specify)*_____

Pleose complete form bosed on largest client.

2 What is your job function? (check one only)

NETWORK IS MANAGEMENT:

1. ☐ Network Management
2. ☐ LAN Management
3. ☐ Datacom/Telecom Management
4. ☐ IS, IT, MIS, CIO, Systems Management
5. ☐ Internet/Intranet Management/Webmaster
6. ☐ Engineering Management
7. ☐ Corporate Management (CEO, Pres., VP, Dir., Mgr., Financial Management)
8. ☐ Consultant (Independent)
9. ☐ Other *(please specify)*_____

3 What is the estimated value of Network equipment and services that you specify, recommend or approve the purchase of? (Please **print** the appropriate **number code** in the box next to each product category. Please complete ALL categories A-M.)

9. $100 Million or More
0. $50 Million to $99.9 Million
2. $25 Million to $49.9 Million
3. $10 to $24.9 Million
4. $1 to $9.9 Million
5. $100,000 to $999,999
6. $50,000 to $99,999
7. Under $50,000
8. None of the above

A ☐ Large Systems *(Mainframes/Minis)*
B ☐ Desktops *(Micros/Laptops/Workstations)*
C ☐ Servers
D ☐ LANs
E ☐ WAN Equipment
F ☐ Carrier Services
G ☐ Internetworking
H ☐ Internet
I ☐ Intranet
J ☐ Remote Access
K ☐ Peripherals
L ☐ Software
M ☐ Service/Support

4 What is the total number of sites for which you have purchase influence? (check one only)

1. ☐ 100+ 2. ☐ 50 - 99 3. ☐ 20 - 49 4. ☐ 10 - 19 5. ☐ 2 - 9 6. ☐ 1 7. ☐ None

5 What is the total number of Servers/Clients/LANs installed/planned at your location/in your entire organization? (Check one box in each column)

	SERVERS		CLIENTS		LANS	
	At Location A	Entire Org. B	At Location C	Entire Org. D	At Location E	Entire Org. F
1.	50,000+		50,000+		50,000+	
2.	10,000 to 49,999		10,000 to 49,999		10,000 to 49,999	
3.	1,000 to 9,999		1,000 to 9,999		1,000 to 9,999	
4.	100 to 999		100 to 999		100 to 999	
5.	50 to 99		50 to 99		50 to 99	
6.	10 to 49		10 to 49		10 to 49	
7.	1 to 9		1 to 9		1 to 9	
8.	none		none		none	

6 What is your scope and involvement in purchasing decisions for network products and services for your enterprise?

A. Scope (check one only)
1. ☐ Corporate/Enterprise
2. ☐ Department
3. ☐ None

B. Involvement (check ALL that apply)
1. ☐ Create Network Strategy
2. ☐ Recommend/Specify
3. ☐ Approve
4. ☐ Evaluate
5. ☐ Determine the need
6. ☐ None

7 What is the estimated number of employees at your location/in entire organization? (check one in each section)

A. At your location:
1. ☐ Over 20,000
2. ☐ 10,000 - 19,999
3. ☐ 5,000 - 9,999
4. ☐ 2,500 - 4,999
5. ☐ 1,000 - 2,499
6. ☐ 500 - 999
7. ☐ 499 or less

B. Entire organization:
1. ☐ Over 20,000
2. ☐ 10,000 - 19,999
3. ☐ 5,000 - 9,999
4. ☐ 2,500 - 4,999
5. ☐ 1,000 - 2,499
6. ☐ 500 - 999
7. ☐ 499 or less

8 Please indicate the products/services that you are currently involved in purchasing or plan to purchase: (Check ALL that apply)

	A. Currently involved in purchasing	B. Plan to purchase
INTERNET/INTRANET		
01.	Internet Services	
02.	Firewalls/Security/Encryption	
03.	Internet Web Servers	
04.	Intranet Web Servers	
05.	TCP/IP Software	
06.	Management/Monitoring Software	
07.	Push Technology	
08.	Web Browsers	
09.	Intranet Applications/Groupware	
10.	Search/Retrieval Products (web crawler)	
11.	Internet Development Tools (JAVA, ActiveX, etc.)	
12.	Electronic Commerce Tools	
13.	Internet Telephony	
LOCAL-AREA NETWORKS		
14.	Local-Area Networks	
15	Network Operating System Software	
16.	Servers	
17.	Print Servers	
18.	ATM Switches	
19.	Token-Ring Switches	
20.	Ethernet Switches	
21.	Fast Ethernet	
22.	Gigabit Ethernet	
23.	IP Switches	
24.	LAN Storage/Backup	
25.	Optical LAN Storage/Backup	
26.	Disk LAN Storage/Backup	
27.	Tape LAN Storage/Backup	
28.	RAID LAN Storage/Backup	
29.	Network Test/Diagnostic Tools	
30.	Cables, Connectors, Baluns	
31.	UPS	
32.	Network Interface Cards	
33.	SNMP Network Management	
INTERNETWORKING		
34.	Routers	
35.	Hubs	
36.	Intelligent Hubs	
37.	Stackable Hubs	
38.	Bridge/Router	
39.	Bridges	
40.	Gateways	
41.	Concentrators/Repeaters	
COMPUTERS/PERIPHERALS		
42.	Network Computers	
43	Laptops/Notebooks/Sub-Notebooks	
44.	Micros/PCs	
45.	Minis	
46.	Mainframes	
47.	Workstations	
48.	Printers/Network Printers	
49.	CD-ROM	
50.	Fax/Modem Boards	
51.	Graphics/Multimedia/Audio/Video Boards	
52.	Memory/Chips/Boards/Cards	
REMOTE/WIRELESS COMPUTING		
53.	Remote Access Products	
54.	Remote Access Services	
55.	PDAs	
56.	PCMCIA Devices	
57.	Wireless Data Services	
58.	Wireless Data Equipment	
59.	Cellular Equipment & Services	
SOFTWARE/APPLICATIONS		
60.	Network Management	
61.	Systems Management	
62.	Security	
63.	Communications Software	
64.	Terminal Emulation	
65.	Operating Systems	
66.	Applications Development Tools	
67.	Database Management/RDBMS	
68.	Groupware	
69.	Workflow	
70.	EDI	
71.	E-mail	
72.	Desktop Video Conferencing	
73.	Imaging	
74.	Suites/Server Suites (Back Office, etc.)	
75.	Middleware	
76.	Document Management	
77.	Site Metering Tools	
78.	Computer Telephony Integration (CTI)	
79.	Data Warehousing	
WIDE-AREA NETWORK EQUIPMENT & SERVICES		
80.	Modems	
81.	Asynchronous Transfer Mode (ATM)	
82.	Frame Relay Equipment/Services	
83.	ISDN Equipment & Services	
84.	FT-1/T-1/T-3 Multiplexers/Services	
85.	DSL Services/Products	
86.	SONET	
87.	Inverse Multiplexers	
88.	SMDS	
89.	Diagnostic/Test Equipment	
90.	DSU/CSU	
91.	VSAT/Satellite	
92.	PBXs	
93.	Voice Mail/Response	
94.	Videoconferencing	
95.	Leased Lines	
96.	Switched Data	
97.	Virtual Networks	
98.	Outsourcing/Systems Integration Services	
99.	Education/Training Services	
00.	None of the above (1 - 99)	

9 Please indicate the platforms that are currently installed/planned:

(Check ALL that apply) A. Currently installed B. Planned for purchase

	A. Currently installed	B. Planned for purchase
NETWORK PROTOCOLS		
01.	TCP/IP	
02.	IPv6	
03.	SNA	
04.	DECnet	
05.	Novell IPX/SPX	
06.	APPC/APPN/LU 6.2	
07.	NETBIOS	
08.	AppleTalk	
09.	NFS	
10.	Other *(please specify)*_____	
LAN ENVIRONMENT		
11.	Gigabit Ethernet	
12.	Switched Ethernet	
13.	Fast Ethernet (100 Megabit Ethernet)	
14.	Ethernet	
15.	ATM	
16.	Token Ring/Token Ring Switching	
17.	IP Switching	
18.	FDDI	
19.	100Base-T	
20.	10Base-T	
21.	LocalTalk	
22.	Fibre Channel	
23.	100vg Any LAN	
24.	Other *(please specify)*_____	
NETWORK OPERATING SYSTEM		
25.	Windows NT	
26.	Windows NT/Advanced Server	
27.	Novell IntranetWare	
28.	Novell (NetWare 4.X)	
29.	Novell (NetWare 2.X, 3.X)	
30.	Microsoft (LAN Manager)	
31.	LocalTalk (AppleTalk)	
32.	Banyan (VINES)	
33.	IBM (LAN Server)	
34.	Artisoft (LANtastic)	
35.	Other *(please specify)*_____	
COMPUTER OPERATING SYSTEM		
36.	NT Server	
37.	NT Workstation	
38.	Unix/Xenix/AIX	
39.	Solaris	
40.	Windows	
41.	Windows 95	
42.	Windows 97	
43.	DOS	
44.	OS/2/OS/2 Warp	
45.	IBM MVS/VM/VSE	
46.	Digital VMS	
47.	Macintosh	
48.	Other *(please specify)*_____	
49.	None of the above (1-48)	

10 Which of the following Servers/Clients do you have installed/planned at your location? (check ALL that apply in each column)

	A. Servers	B. Clients		A. Servers	B. Clients
Power PC	01.	02.	486	07.	
Power Mac	03.	04.	386	08.	
Mac Other	05.	06.	286	09.	
Multiprocessor Servers	04.		Risc	10.	
PG/PII	05.		Alpha	11.	
Pentium/Pentium Pro	06.		Other	12.	

11 Which of the following hardware platforms are installed/planned in your company? (check ALL that apply)

A - Mainframes (Large Scale) Installed/Planned
1. ☐ IBM
2. ☐ Amdahl
3. ☐ Cray
4. ☐ Hitachi
5. ☐ Unisys
6. ☐ Other _____

B - Minis (Midrange) Installed/Planned
1. ☐ IBM RS6000
2. ☐ IBM AS400
3. ☐ Digital
4. ☐ Tandem
5. ☐ Unisys
6. ☐ AT&T GIS
7. ☐ H-P
8. ☐ Data General
9. ☐ Other _____

C - Workstations Installed/Planned
1. ☐ Sun Microsystems
2. ☐ Silicon Graphics
3. ☐ Digital
4. ☐ H-P
5. ☐ IBM
6. ☐ Other _____

12 What is the estimated gross annual revenue of your entire company/ institution? (check one only)

01. ☐ $20 billion or more
02. ☐ $10 billion to $19.9 billion
03. ☐ $1 billion to $9.9 billion
04. ☐ $500 million to $999.9 million
05. ☐ $100 million to $499.9 million
06. ☐ $50 million to $99.9 million
07. ☐ $10 million to $49.9 million
08. ☐ $5 million to $9.9 million
09. ☐ $4.9 million or less
10. ☐ None of the above

13 For which areas outside of North America do you have purchase influence? (check ALL that apply)

1. ☐ Europe 2. ☐ Asia 3. ☐ South America 4. ☐ Australia 5. ☐ Middle East 6. ☐ None

B598

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Local Networks

Covering: LAN Hubs • Switches and Management • Operating Systems • Servers • Thin Clients

Briefs

■ **Edgepoint Networks, Inc.** *has introduced a series of* **Ethernet and Fast Ethernet switches and hubs** *that include WAN connectivity.*

Edgepoint's *EdgeStack 316 switching hub*

The company rolled out two EdgeStar 200 models: one with 12 10M bit/sec ports and two autosensing 10/100M bit/sec ports, and another with 24 10M bit/sec ports and two autosensing 10/100M bit/sec ports. An add-on card provides 56K bit/sec modem capabilities. In addition, customers can add Remote Monitoring and SNMP management to the switches. The 14-port device costs $495 and the 26-port device costs $1,595.

Also new is the EdgeStack 316, a 16-port autosensing 10/100M bit/sec switching hub. In addition, Edgepoint rolled out its EdgeSwitch 400, a 10/100M bit/sec switch. Both products support WAN connectivity. The EdgeStack 316 costs $1,295, while the EdgeSwitch 400 costs $1,895.

✆ Edgepoint: (408) 986-1700

■ **Unisys Corp.** *has outlined its plan to build* **Windows NT servers** *based on Intel Corp.'s future Pentium II Xeon and Merced processors. Unisys' new Cellular MultiProcessing architecture will be designed to let applications running on NT handle tasks requiring mainframe-like performance and reliability. Servers based on the architecture will feature from four to 32 processors and will support up to 32G bytes of shared memory and up to 96 PCI slots. Customers will be able to run high-end servers as 32-processor symmetric multiprocessor systems or partition the processors into clusters of four.*

Unisys will start selling servers based on the Cellular MultiProcessing architecture early next year.

Revisiting the desktop TCO issue

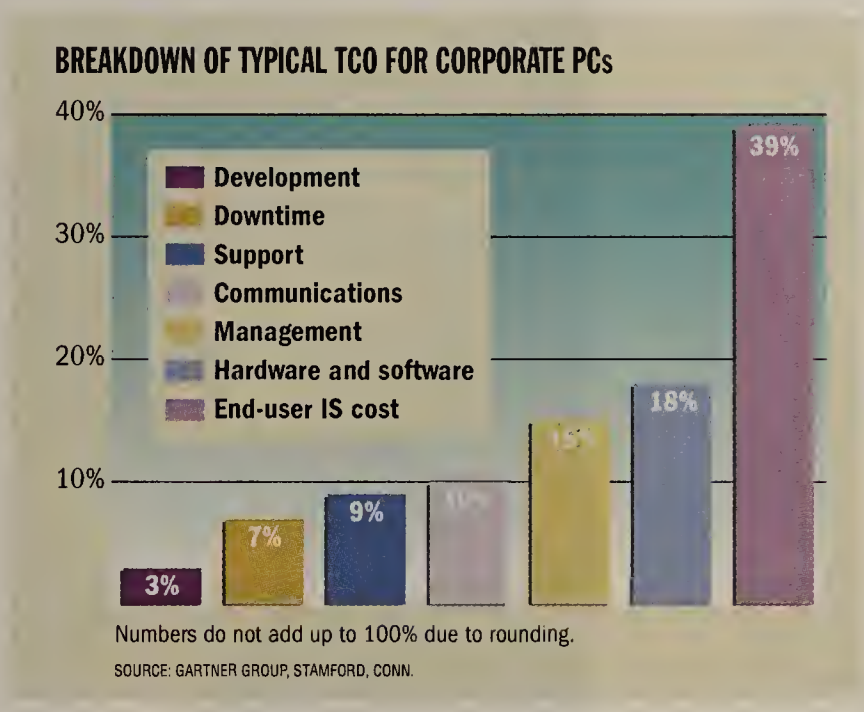
Gartner analyst advises administrators to devise their own TCO benchmarks.

By Scott Lajoie

Ten thousand dollars per year.

For the past couple of years this figure has been bandied about by the media and network industry participants to describe the total cost of ownership (TCO) for corporate desktop computers. The number, which includes the purchase price, maintenance costs and more, has been especially popular among thin-client proponents seeking to point out the need for network computers (NC) or other desktop alternatives.

But now that prices for full-blown PCs are plummeting and even Oracle Corp. Chairman Larry Ellison is toning down his NC act, it seems to be a good time to revisit the TCO phenomenon. And who better to ask about the issue than Gartner Group, Inc.'s Tom Pisello: He's managing vice president of software products for Gartner, the Stamford, Conn., market research firm largely responsible for making TCO a common industry term.



One significant clarification Pisello made about the $10,000 per year figure is that the cost per PC actually tends to range from $3,000 to $25,000 depending on the company's computing environment. For instance, a law firm or other professional organization might only run low-end applications that require basic, fairly inexpensive desktop systems while a software development firm could pay well over $10,000 per workstation.

"The general awareness building [about TCO] is over, and now we have to move to the next step — TCO management," Pisello said.

Gartner offers two software packages, TCO Analyst and TCO Manager, to help clients determine their TCO per PC. The programs access a large database of information residing on a Gartner extranet and can be used to assess costs based on the following parameters:

- Company profile — includes type, size, location and number of users.
- Assets — consist of servers, clients, peripherals, network devices and topologies.
- Complexity — differentiates between elementary and complicated network and desktop setups.
- Best practices — include levels of virus detection, asset management and assorted security policies.

Many of Gartner's initial assumptions about TCO still hold true. For example, Pisello said standardization on hardware and software platforms as well as on applications can save companies as much as 11% per year on desktop administration.

But Gartner has also revised its TCO system to take more recent trends into account. For instance, falling hardware prices are balanced by increasing software costs because more organizations are relying on high-end applications, such as enterprise resource planning programs.

✆ Gartner: (203) 316-1111

RadioLAN takes its wireless gear outdoors

By Bob Brown

RadioLAN later this month will deliver a product that will let customers establish wireless Ethernet links between buildings separated by up to 1,000 feet.

The new offering, dubbed Wireless CampusLink, can be used to connect wired or wireless LANs across a campus. The product complements the 5-year-old company's existing 10M bit/sec wireless workgroup and backbone network products.

Wireless CampusLink *includes a combination bridge/radio device and a 5-inch dish antenna.*

The product should appeal to customers who cannot obtain right-of-way permission to lay cable between buildings, who are looking for a less expensive alternative to leased lines and who want to back up their current interbuilding links, according to Mark Bosse, RadioLAN's vice president of marketing.

Wireless CampusLink consists of a combination bridge/5.77-GHz radio, an antenna about the size of a coffee cup and management software. A customer must set up the bridge/radio and antenna at each site, and there must be a direct line of sight between the gear at each site. No Federal Communications Commission license is required to operate the wireless network.

Customers can control the network using RadioLAN's CampusLink Manager, a management and configuration tool featuring a Web browser interface.

The city of Walnut Creek, Calif., is testing Wireless CampusLink to tie together the community's city hall and performing arts buildings, which stand about 100 yards apart. The city is giving the RadioLAN product a whirl in hopes of replacing a 56K bit/sec line that costs $120 per month, said Gary Lech, the city's IS manager. RadioLAN is charging $2,999 per unit.

"The cost per megabit, per second could offer a good return on investment," Lech said.

In addition, the wireless setup would give Walnut Creek control of its own network link and make the city less reliant on the local phone company.

The city has been testing the RadioLAN gear for less than a week, so it's too early to say how the product works, Lech said.

✆ RadioLAN: (408) 616-6300

Get more online:

- **An Aberdeen Group paper on the cost of server ownership**
- **A TCO and return on investment calculator from Interpose and Microsoft**

Users praise new Novell desktop manager

ZENworks takes advantage of information stored in Novell Directory Service.

By John Cox
Provo, Utah

Beta testers say Novell, Inc. may have hit a home run with Zero Effort Networks (ZENworks), a directory-enabled desktop management application released by the company last week.

ZENworks can tap into Novell Directory Service (NDS) for information about end users, applications, file servers and individual PCs. Net administrators can use this information to distribute software, change application access rights and provide help desk services for individual users and groups (*NW*, Feb. 16, page 8).

Beta testers emphasized that ZENworks has broad applicability. They said the tools can work across NetWare networks as well as networks consisting of Windows and Windows NT systems. ZENworks uses Novell's NDS for Windows NT products to support Microsoft Corp. software environments.

ZENworks' impact on a corporate network can be immediate and dramatic, according to Jon Freeman, president of Mycroft, Inc., a network integrator in New York.

One Mycroft client is converting 5,000 desktops from Windows 3.1 to Windows NT 4.0. The company is using more than 300 applications, and each desktop supports a different mix depending on the end user's title and department.

Via ZENworks, the company's administrators are able to associate applications with individual end users and groups of end users, and can make the icons for those applications appear on a desktop's "Start" menu.

ZENworks can even detect if a user has accidentally deleted an application's Dynamic Link Library or moved an application's desktop icon to a different folder.

One key feature missing in the first version of ZENworks is support for the Desktop Management Initiative (DMI) 2.0 specification, Freeman said. DMI support would let small agents on PCs detect changes or problems and send alerts to ZENworks management stations.

Another user, the University of Michigan Medical Center in Ann Arbor, is considering ZENworks to replace the school's highly manual desktop management system. The university's MIS staff has created an array of client and server scripts that handle many ZENworks-like functions.

The problem is that the home-grown system has to be maintained by hand and it takes a lot of effort to train new staffers on the complex system, said David Hasselbach, a network engineer at the center.

"ZENworks lets me say who can or can't log in to a given machine," Hasselbach said. "It lets me do scheduled software updates at off hours. This is because the directory can now be aware of the [PC] as a discrete entity, with certain hardware and software associated with the [computer]."

Hasselbach noted that ZENworks is the only product he knows of that can be configured to install printer drivers on NT machines. Today, this task needs to be done by hand.

"Even Microsoft doesn't have a way to do this automatically," Hasselbach added.

ZENworks costs $39 per user for Windows 3.X, 95 and NT machines.

© Novell: (800) 638-9273

WIRED WINDOWS

Should you be certifiable?

My column from three weeks ago generated more e-mail than any other so far this year. It usually takes an egregious error or an attack on some sacred cow to draw this kind of response. The surprise this time is that well over 95% of the respondents simply wrote to say they agreed with my conclusions — that certifications such as the MCSE, CNE and their ilk prove nothing about someone's ability to manage a network.

Most of the letter-writers went on to indicate that there was a place for the certifications, but only in conjunction with actual hands-on experience. A number of them pointed to Cisco's CCIE (Cisco Certified Internetwork Expert) program that — in addition to requiring a written test — requires a two-day hands-on laboratory exam in various specialties. Not only do you need to know the theory, you must also be able to apply it.

There were a number of people who suggested that an apprenticeship program could be useful when used in conjunction with certification testing. While that wouldn't be easy to set up, the certification issuers (Microsoft, Novell, et al.) could require some hands-on experience (supervised experience, I might add). This could be acquired in a business or academic setting. Businesses could set up internship programs in IT that would allow promising candidates to gain needed experience while involved in a formal training program. Community colleges that are already teaching certification courses could add networking laboratories. By working with local businesses, the colleges could offset the cost of the labs by allowing IT departments to use the facilities as test beds for evaluation of new hardware and software.

Dave Kearns

Companies that rely heavily (or exclusively) on certifications in the hiring process were roundly denounced, even by those who got their current jobs solely by dint of being certified.

It was suggested more than once that businesses that need to hire IT personnel, but do not have the in-house expertise to choose among the applicants, could use the services of an independent consultant.

Of course, this leads to the question of how to evaluate the consultant. There are a number of methods you could use: Ask for recommendations from local users groups, speak to the consultant's other clients or get recommendations from the network operating system vendors.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@ vquill.com.

Tip of the week

Here's another reason to keep Windows 98 off your corporate desktops: It is rumored that Microsoft is offering incentives to PC makers that ship Windows 98 machines equipped with TV tuners. So in addition to lost productivity due to Web surfing, you could add soap opera viewing! While the TV tuner might be good for your home machine, let's try to keep it out of the workplace. Insist on Windows 95 (or better, Windows NT) for your corporate desktops.

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Briefs

■ **Hewlett-Packard Co.** *and* **Ganymede Software, Inc.** *last week announced an* **agreement to sell and develop products** *for network equipment manufacturers, service providers and enterprise end users. Under the terms of the agreement, Ganymede's current Chariot and Pegasus products will be resold through HP. The two companies also will work together to develop products integrating HP's network test and measurement functions and Ganymede's application and network performance analysis technologies.*

✆ HP: (800) 752-0900; Ganymede: (919) 469-0997

■ **Optimal Networks Corp.** *this week will roll out management software for Informix Software, Inc., Oracle Corp. and Sybase, Inc. databases on IP and IPX networks. The Optimal Application Modules* **translate client/server and distributed application communications** *into application threads. Each application thread is then analyzed and presented in a format that application managers, network managers and developers can all understand. These thread statistics pinpoint sluggish network processes that may be responsible for slowing down the overall application. Until June 15, the Application Modules will be available for free to users of Optimal's Application Expert software. Application Expert, which costs $15,000, tracks application and network performance.*

✆ Optimal: (650) 845-6333

■ **XcelleNet, Inc.** *last week announced a new feature for its RemoteWare Express software package that* **pushes documents to remote dial-up users.** *Called Document Manager, the new feature lets IS managers force new or updated documents, such as price lists, on remote users when they dial in. RemoteWare runs on Windows NT servers and costs $13,500. Client software costs $135 per seat.*

✆ XcelleNet: (770) 804-8100

IBM boosts mainframe connectivity

By Marc Songini

IBM recently beefed up the power and connectivity options of its mainframes.

The company announced a family of 16 new System/390 mainframes, called Generation 5 (G5) servers, that doubles the performance of previous Big Iron. IBM also said it would add support for direct Fibre Channel and Gigabit Ethernet links in the new G5 servers.

The announcement continues the evolution of IBM's biggest boxes. In the past two years IBM has boosted the connectivity options for users by adding improved support for everything from Fast Ethernet to ATM. The big boxes have also seen improvements in TCP/IP performance. The new, more powerful S/390s will help users more efficiently run a variety of enterprise resource applications from PeopleSoft, Inc. and SAP America, Inc.

While mainframes remain an expensive server option, with prices starting at about $100,000 and topping out in the millions, one of IBM's most important goals has been to present the mainframe as a cost-effective way to consolidate the work of multiple servers under one manageable entity.

To boost connectivity options, IBM said it will roll out a Fibre Channel option called Fibre Connection (FICON) channel. Fibre Channel is a high-speed interface capable of supporting throughput up to 1.6G bits/sec. Typically Fibre Channel has been used to tie big servers and storage devices together. IBM will offer a FICON card that slips into one of the new mainframe's I/O slots. Up to 12 FICON adapters can be supported on any G5 box.

IBM said the FICON cards will be a high-speed option to its current Enterprise System Connection (ESCON) channel connectivity adapter. ESCON supports data transfer speeds up to 17M byte/sec. For users who want to mix and match FICON and ESCON features, IBM will offer a FICON director that will support both technologies, said Erich Baier, manager for CMOS systems at IBM. A single FICON card can handle capacity equivalent to eight ESCON channels, he said.

Fibre Channel support will be useful for companies using the mainframe to run huge files with voice or video data back and forth from storage devices to the mainframe, said Frank Duzbeck, president of Communications Network Architects, a Washington, D.C.-based consultancy.

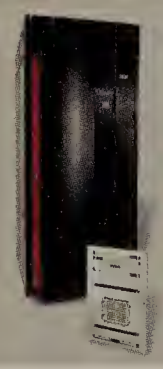
IBM said it will add support for Gigabit Ethernet to its Open Systems Adapter (OSA). OSA is the way IBM directly links the mainframe with LANs. OSA currently supports traditional Ethernet, Fast Ethernet, Token Ring, ATM and FDDI links.

Mainframe shops should be interested in these new, higher performance options, said Bob Nix, a senior software analyst at Lafayette Life Insurance, based in Lafayette, Ind.

The new mainframes will be available in September, the FICON adapter in March 1999, and the Gigabit Ethernet support in the OSA will come sometime after that, IBM said. Pricing for the new adapters was not available.

✆ IBM: (800) 426-3333

THE GENERATION 5 S/390



Among the new features and enhancements coming to IBM's mainframes are:

- Fibre Channel and Gigabit Ethernet support
- Improved Triple DES encryption and Java application performance
- 24G byte memory increase
- New CMOS chips that produce 115 MIPS

AccessLan does frame relay over DSL

New equipment hikes copper wire bandwidth over 25 fold.

By Tim Greene
San Jose, Calif.

Start-up AccessLan Communications, Inc. this week will introduce a system for boosting the bandwidth of dedicated access lines to frame relay networks.

AccessLan's hardware takes advantage of digital subscriber line (DSL) technology to increase the speed of a single pair of copper wires from 56K bit/sec to 1.5M bit/sec — more than 25 times the bandwidth.

A traditional 1.5M bit/sec T-1 circuit requires an extra pair of wires, and the hardware at each end costs five times what AccessLan's gear costs, the company said.

AccessLan's offering consists of three pieces of DSL hardware: the AccessLoop 100 DSU; the AccessEdge 200 IP router; and the AccessCentral 2000 DSL concentrator.

AccessLoop and AccessEdge are customer site devices that sit between a local and wide area network, converting LAN traffic to frame relay for transport over a DSL access line.

AccessCentral 2000 is a multiplexer that sits at the other end of the access line in a service provider's switching office. The device concentrates DSL lines onto a trunk connected to a frame relay switch.

For a customer to take advantage of AccessLan's system, he needs a service provider offering DSL and willing to install the AccessCentral 2000.

Upgrading slower access circuits to 1.5M bit/sec DSL might be just what ILX Systems needs. The New York-based stock market data vendor has 115,000 users in North America.

"Adding bandwidth economically is something that we are interested in," said Bernie Weinstein, ILX's CEO.

"With the incredible increase in trading transactions, we're constantly increasing capacity to maintain the quality of our services," Weinstein added.

AccessLoop 100 costs $850 and AccessEdge 200 costs $1,150. The AccessCentral 2000 chassis costs $20,000 and interface cards with 21 ports cost $9,996. Management software for AccessLan gear, called AccessControl, costs $20,000.

✆ AccessLan: (408) 467-6513

ACCESSING DSL

AccessLan introduces its digital subscriber line (DSL) products:

- **AccessLoop 100 — customer DSU supporting frame relay over DSL**
- **AccessEdge 200 — customer router for DSL service**
- **AccessCentral 2000 — carrier DSL concentrator**
- **AccessControl — DSL provisioning and management software**

Start-ups target app monitoring

By Jim Duffy
Framingham, Mass.

Two start-ups are focusing their efforts on that most critical element of service management: application response time.

FirstSense Software, Inc. last week debuted FirstSense Enterprise for managing the performance of distributed applications. And NextPoint Networks, Inc. enhanced its NextPoint S3 product with programmable agent software for real-time application monitoring.

FirstSense Enterprise runs on Windows 95, Windows NT and Unix clients and servers. Enterprise includes three components: agents, a management console and a data repository. The agents monitor distributed applications in real time and compare application availability and performance with service-level thresholds. From the console, administrators can define thresholds and quickly see which users are experiencing performance problems. The console also allows managers to specify corrective action plans and customize data collection and reporting.

The FirstSense Enterprise repository stores historical problem and end user application usage data in an SQL database. FirstSense said it has published the repository schema so third parties can create reporting, graphics and data mining tools that can access the repository.

FirstSense Enterprise is in beta testing and the software will be available next month for $22,500.

The applications of my eye

FirstSense announced:

- FirstSense Enterprise, which includes management agents, console and data repository
- Partnerships with Lucent, Computer Associates and InfoVista

NextPoint introduced:

- Production Transactions agent, a programmable agent for measuring actual application transactions rather than simulated ones
- Harmony program for software developers, resellers and integrators

FirstSense will be competing in the application monitoring market with NextPoint's new Production Transactions agent. NextPoint's software, which runs on Windows NT and Sun Solaris clients and servers, includes an API based on the Application Response Measurement API developed by Hewlett-Packard Co. and Tivoli Systems, Inc.

The Application Response Measurement API lets users build production applications with the NextPoint agent. The agent measures transaction time from client request to server response.

NextPoint already offers preprogrammed, or "canned," transaction tracking agents called Synthetic Transactions. The Production Transactions agent, though, will let users collect real-time measurement data on "live" transactions.

One NextPoint user was cautiously intrigued. "The agent with signaturing will be compelling," said the user, who works for a large investment banking firm in the Northeast. "Are we out of the woods with this? Are we ready to throw this into large-scale production? It's too early to tell."

The Production Transactions agent will be available in July. A package of 10 will cost $4,995.

✆ FirstSense: (781) 685-1105; NextPoint: (978) 392-2026

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Software tracks remote users via e-mail

By Tim Greene
Los Angeles

Mobile Automation, Inc. recently introduced a software agent that uses existing corporate e-mail packages to manage remote PCs.

Called RightState, the software automatically inventories remote laptops and PCs when the users dial in to the corporate network. The inventory includes a check of hard disk space and what software is loaded on the remote computer. In addition, RightState can upload new or updated programs to remote computers.

RightState consists of client software that runs on Microsoft Corp.'s Windows 3.2, 95 or NT clients and a server.

Riding on e-mail programs from Microsoft, Lotus Development Corp. and systems that support Post Office Protocol 3 (POP3), RightState determines what software is loaded on remote clients and gathers information about the state of the computer hardware.

If a remote user needs a new version of software, for example, the IS administrator places the software in the message queue as a "job" to be delivered to that user. When a remote user with a RightState client dials in to the central site server, whatever jobs are queued are sent.

RightState probes the remote client before sending software updates to determine what portions of the software to be updated are already on the client. RightState sends only the changes or additions the client lacks.

Files are broken down into segments and compressed before being sent to make efficient use of the limited bandwidth available over dial-up connections.

While RightState uses e-mail to transport uploads and downloads, those messages do not appear in the client e-mail queue. From the server side, RightState appears administratively as just another e-mail account. RightState can also send files using the File Transfer Protocol.

With more and more remote users to manage, corporate IT staffers need automated tools to track what software remote users have on their PCs, said Rick Villars, director of network software research for International Data Corp. in Framingham, Mass. So far, Mobile Automation's RightState, Xcellenet, Inc.'s RemoteWare and IBM's Mobile Equalizer are the main contenders to fill the need, he said.

Without such tools, software updates and fixes were a nightmare, Villars said. Either the remote users had to install the software themselves or their computers had to be brought in to be updated in person by the IT staff.

"Look at what people are spending for remote access. It doesn't make sense not to be able to control the end device," Villars said.

RightState is available for $175 per client. The cost includes server software.

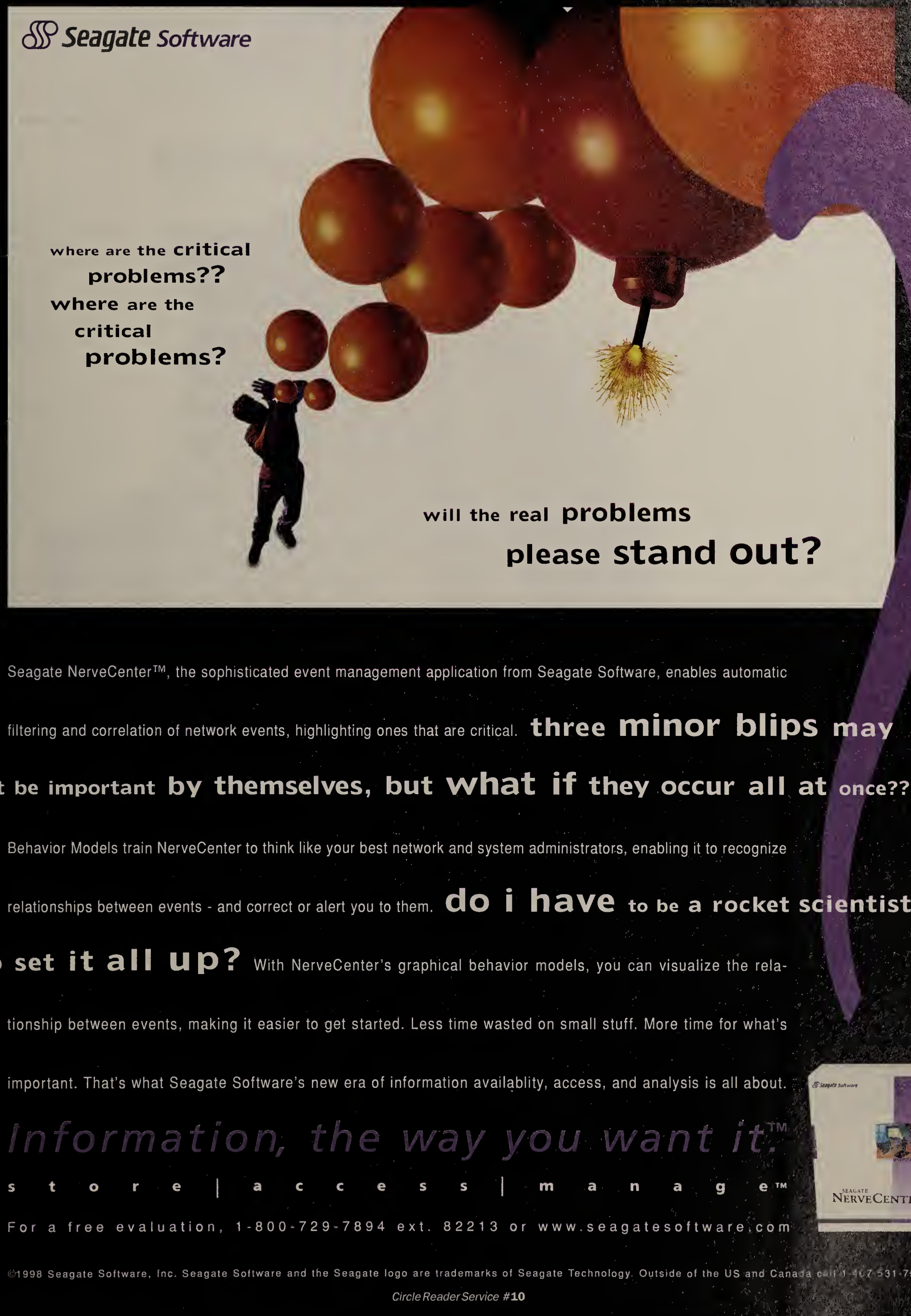
© Mobile Automation: (310) 914-9603

REMOTE MANAGEMENT VIA E-MAIL

Mobile Automation's RightState software tool manages remote computers by:

- Using existing e-mail programs to inventory remote computers.
- Transferring software changes and installs via e-mail when remote users log on to corporate central sites.
- Compressing transfers to minimize use of bandwidth.

Seagate Software



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*Estimated reseller price to end users for IBM PC 300PL model 6862-18U; IBM G42 monitor with 14" screen and 13.2" viewable image starting at $224; monitor shown is IBM P72 with 17" screen and 16" viewable image starting at $599; certain features described above are available for an additional charge. Actual reseller prices may vary. MHz denotes microprocessor internal clock speed only; other factors may also affect application performance. All PCs referenced in this ad ship with an operating system. IBM product names are trademarks of International Business Machines Corporation. Intel, the Intel Inside logo and Pentium are registered trademarks and MMX is a trademark of Intel Corporation.

Briefs

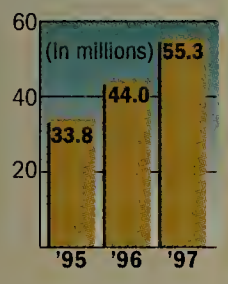
■ *The Senate last week unanimously passed the* **Consumer Anti-Slamming Act of 1998.** *The act prevents carriers from changing users' long-distance service provider without the user's permission* **or face a $40,000 fine, or $150,000 for repeated offenses.**

*The bill's sponsor, Sen. John McCain (R-Ariz.) had complained that penalties imposed by the Federal Communications Commission on slammers were too puny. Though most commonly aimed at residential customers, corporate branch offices have also suffered slamming attacks (*NW, *Sept. 1, 1997, page 30).*

■ *The number of people using* **mobile phones grew 25.7%** *last year, while the number with pagers rose 17.2%, according to a new Federal Communications Commission report to Congress. The FCC cited* **mobile telephony as the hotbed of competition** *— one the FCC wishes it could find in local wireline telephony. For example, in the nation's 25 largest cities, there are an average of 29 paging companies competing for customers, the FCC reported.*

WIRELESS GROWTH

Number of cellular and PCS customers



■ *As expected,* **Iridium LLC,** *the first of the new low-earth orbit satellite providers,* **completed its 66-satellite network** *with a successful May 17 launch of its last required satellite. Motorola, Inc. will operate the network, which will provide global voice, paging and low-speed data applications on a single handset beginning Sept. 23.*

Sprint Corp., one of many carriers around the world with a stake in Iridium, also holds the contract to run the company's customer-service call centers.

Building a new ISP out of an old one

GTE Internetworking's Paul Gudonis talks up the company's Internet services.

Q&A

It's been a year since GTE Corp. in Cambridge, Mass., announced plans to acquire BBN Corp. (*NW,* May 12, 1997, page 8). A few months later, the deal was final, and GTE Internetworking was born.

When GTE bought BBN, the company also purchased 15,000 route fiber miles of Qwest Communications, Inc.'s OC-192 nationwide network, which Paul Gudonis, president of GTE Internetworking, calls "our wedding dowry." The ISP division is using this fiber to create a new nationwide Internet backbone called the Global Network Infrastructure (GNI).

Gudonis talked recently with *Network World* Senior Editor Denise Pappalardo about the GNI and other developments at GTE Internetworking.

What are the biggest benefits of being owned by a telecommunications company?

We wanted to be part of a company that had network capital. And that's what we got, especially with the Qwest fiber purchase. Our capital budget went from $50 million a year to $1 billion a year.

We continue to run our own

network, develop our own services and bill for our services. We also now have all of GTE's IP voice and IP fax services rolled into our unit.

Has the mood or atmosphere at GTE Internetworking changed since the acquisition?

No. Most senior managers are committed to GTE Internetworking.

What does GTE Internetworking plan on doing with its GNI Internet backbone? What types of new services can we expect?

Unified messaging, IP fax, and Web dial tone services, where you convert your PC into an Internet phone so you can share Web pages and talk across the network at the same time. And we are also making enhancements to our current offerings.

We may also migrate some of our corporate dial services to this network. We will be linking our 12 hosting centers, some from the Genuity side of the house, to the GNI.

We will also be adding traditional frame relay and ATM data services to the GNI.

What about GTE Internetworking's international network deployment?

We will be making more announcements about our global plans later this year.

We already have a Web hosting facility in London, and we have an ongoing relationship with Equant for interconnectivity services throughout Europe.

Digital subscriber line is a recent addition to GTE Internetworking's product portfolio. Of your customer base, which of your users will most benefit from this new service?

Network aficionados that work at home, that have to have fast access.

[This is] a group of early adopters who are Internet-intensive users that will spend additional money for fast access. And the business telecommuters that work with bandwidth-intensive applications, and those that need fast access to their LAN.

Where does GTE Internetworking stand on IP services?

We have been working on technical trials, internally, that

See **GTE,** *page 30*

AT&T pairs with start-up to offer fault mgmt. pack

NetOps wins deal with carrier for its pay-as-you-go "Do-It-Yourself" device monitoring service.

By David Rohde
Basking Ridge, N.J.

AT&T continued building up its partner portfolio earlier this month with a deal to offer users a start-up's fault management software.

The telecom giant signed an agreement with NetOps Corp. of Pleasantville, N.Y., a provider of pay-as-you-go Web-based management reports.

Under the agreement, AT&T will not only resell NetOps' Do-It-Yourself network analysis software, but will also make it the basis of a new, enhanced AT&T fault-management service.

Do-It-Yourself is a subscription-based analysis tool that alerts network managers to potentially troublesome conditions in servers, hubs, routers and other devices.

To use the tool, network administrators first download NetOps' data collection and polling software, known as the Distributed Status Monitor (DSM), at no charge from NetOps' Web site.

After collecting data from SNMP-compliant devices for up to a week, the DSM uploads the information to NetOps' analysis engine via the Web for a standard transaction charge plus a per-device fee (see graphic).

NetOps returns a report via e-mail detailing potential problems and suggesting fixes.

The first part of AT&T's implementation, available now, is simply making the DSM software available on AT&T's Web site and charging the same NetOps transaction fees.

But the key part of the deal is due in the third quarter, when AT&T introduces the AT&T Predictive Network Management Solution.

Under this service, AT&T first will install the DSM on the customer's site. Then users will upload data collected by the DSM to a NetOps server at AT&T Solutions, the carrier's managed network and outsourcing arm.

Engineers in AT&T Solutions' Managed Network group will then "walk through" the report with users to provide additional recommendations.

Prices for the AT&T Predictive Network Manage-

See **AT&T,** *page 30*

Pay as you go for reports

NetOps* levies the following charges for each weekly upload of data about a customer's network devices:

Transaction charge: $500

Charge per device:
- $10 for each device with up to 60 ports
- Additional $10 for each additional 60 ports on a device

*Users who select the new AT&T Predictive Network Management Solution based on the NetOps system could pay at least 50% more than what NetOps charges, though prices have not yet been set.

Choosing a quality color system

1

2

CLC 320

CLC 900

*Source: Dataquest (A Gartner Group Company)

for your network is as easy as

3

CLC 950

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Circle Reader Service **#12**

AT&T

Continued from page 27

ment Solution have not been finalized.

But AT&T officials said they would likely include at least a 50% markup over the NetOps transaction fees.

Another difference between the stand-alone NetOps service and the new AT&T offer: NetOps requires no minimum usage commitment, but AT&T will probably require a one-year term contract.

Analysts said the new service is part of AT&T Solutions' drive to quadruple its revenue by 2002. They were lukewarm on whether the AT&T hand holding is worth the extra cost.

"If you have an IS department with any skills at all, implementing the tool should be something you don't need AT&T for," said Richard Brewer, senior analyst for International Data Corp.'s Network Support and Integration Service.

The enhanced recommendations from AT&T Solutions probably won't be important for assessing standard LAN-interconnection issues, such as sizing frame relay ports and circuits to handle increasing traffic loads, according to Brewer.

But they could be useful for more complex applications such as voice/data WAN integration or electronic commerce.

Brewer cautioned that neither the stand-alone NetOps product nor the AT&T predictive service would have helped much during AT&T's massive frame relay outage on April 13.

This is because the problem was in the carrier network, and the NetOps tool "wouldn't scale to anything approaching that level anyway."

But he credited AT&T for signing yet another partnership deal to add an outside vendor's tool to its Global Enterprise Management System.

The system will will form the basis of AT&T Solutions' complete LAN management outsourcing offer later this year (*NW*, April 6, page 1).

Deals with outside vendors throughout AT&T were few and far between until Chairman and CEO C. Michael Armstrong took office last November, but they have rapidly increased in the past few weeks.

The deals include agreements with enhanced DSU/CSU vendor Visual Networks, Inc. to provide service-level management and with Yahoo! to enable consumers to buy AT&T services online. Another deal entails a new managed-bandwidth service involving installation of Newbridge Networks, Inc. multiplexers on customer sites (*NW*, May 11, page 14).

AT&T also has an arrangement to use call-routing software from Geotel Communications Corp. for high-volume call centers (*NW*, May 11, page 33).

✆ AT&T Solutions: (973) 443-2473; NetOps: (914) 747-7600

GTE

Continued from page 27

involve passing IP phone calls over a network.

Before we do any kind of product realistically, we have to make sure it scales. It's one thing to support IP voice on a small scale, like a hobbyist version, and quite another thing to put hundreds of millions of users on your network overnight.

We are also progressing with our IP Fax trial [which the company announced in March]. ■

Get more online:

- Information about competing ISPs
- Background on the GNI project

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WAN MONITOR

Help! My network's down, and I can't get it up!

Hjälp! Aiuto! Dowoon! Pomoc! Socorro! Assistez moi! Help!

It doesn't matter in what language you say it. Getting help and support for your international data services can be difficult. Many vendors have loose partnerships with other vendors, making it even harder to obtain service.

Subscribing to a vendor whose performance is dependent on other providers — of which the vendor has limited knowledge or control — can lead to problems.

We asked TeleChoice analysts Cathy Gadecki and Deb Mielke about preparing a request for proposal for a large international data service network.

Gadecki and Mielke emphasized the importance of understanding the ties that bind a service provider to its partners. It includes ensuring service-level agreements (SLA) amongst all partners will meet your RFP requirements. Problem areas to watch out for include:

• **International gateways and trunking**

Look for more than one crossing between regions with sufficient capacity to support traffic in a failure condition.

• **Maximum hop counts**

Ask about hop counts during both normal operating and failure conditions. Request a packet or frame trace from one location to another.

• **Capacity engineering**

Request the process for capacity upgrades within and between partner networks. How does the vendor monitor the utilization of the network? How much capacity is reserved for restoration during failure conditions?

Daniel Briere
Christine Heckart

• **SLAs**

SLAs do give an indication of the service provider's belief in its ability to execute. Ask for commitments to service rollouts, order intervals, latency, throughput, end-to-end availability, mean time to repair and billing accuracy. Set strict penalties for missed agreements.

• **Equipment interoperability**

The partners may be using equipment from different vendors. How have they tested performance across switching and routing platforms?

• **Methods and procedures**

Ask about methods and procedures for customer care, including: provisioning; network monitoring, maintenance and repair; and billing. Demand the details on these critical aspects of your service.

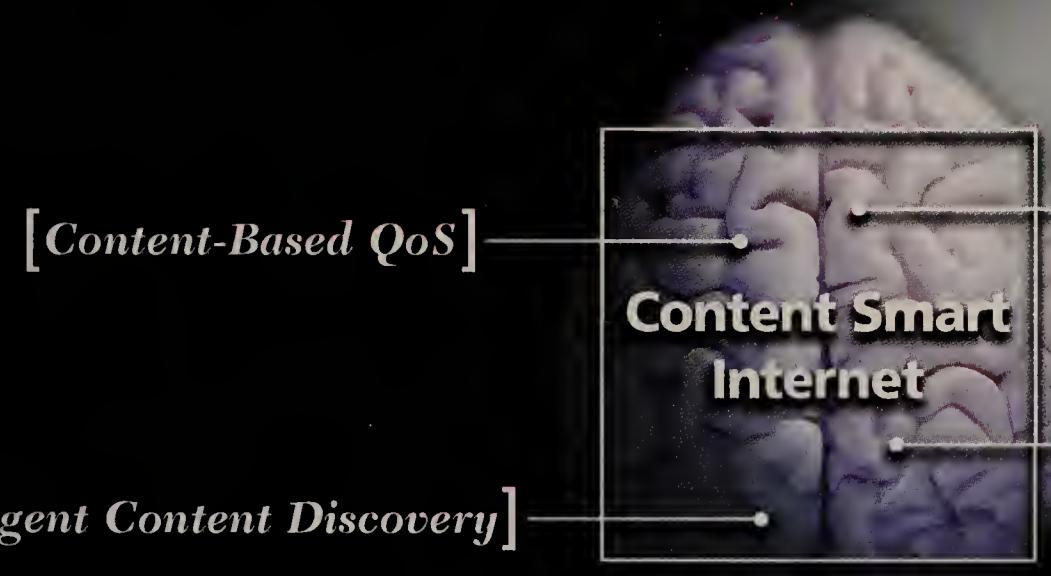
• **In-country support**

Measure the commitment to quality international services by the number of in-country operations centers, the hours and the number of employees supporting your service. With managed services, get details on the on-site support provided.

If the prospective vendor ducks the discussions or tends to drift into windy responses focused on domestic networks — buyer beware. If it doesn't have the information for an RFP response, the vendor hasn't spent much time working out the difficult details in delivering world-class data services across the globe.

Briere is president and Heckart is vice president of TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at dbriere@telechoice.com and checkart@telechoice.com.

While everybody's been working on the *backbone,*



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Briefs

■ **Sun Microsystems, Inc.** *has released Java-based sofware designed to coordinate the work of members of development teams, including those in remote locations, by* **identifying and recording all changes made to project files.**

These files can contain source code, Web content, graphics and other types of data. The software, JavaSafe 1.0, runs on Solaris, Windows 95 and NT, and can be used with Sun's Java Development Kit and third-party vendor application development tools, Sun officials said. JavaSafe 1.0 is sold on a per seat basis, starting at $209 per seat, and is available now at java.sun.com/products/javasafe or by calling (888) 843-5282.

■ *Start-up* **Motive Communications, Inc.** *recently announced Motive OutReach,* **Windows NT server software** *that lets an end user with a Java-enabled browser report a desktop software problem to a software distributor.*

When the OutReach server gets a trouble report, it automatically runs remote diagnostics on the desktop to assist the software technician in conducting interactive troubleshooting with the end user.

In beta this week, Motive OutReach is expected to ship in July. Pricing will range from $50,000 to $150,000.

✆ Motive Communications: (512) 339-8335

■ **Sterling Commerce, Inc.** *this summer will ship* **COMMERCE:Tracker,** *Web server-based software for browser access to shipment management and supply-chain information.*

COMMERCE:Tracker, not yet priced, can be integrated into enterprise resource planning systems.

✆ Sterling: (800) 299-4031

Microsoft seeks e-commerce allies

Site Server line expected to grow as company ships product, announces partnerships.

By Scott Lajoie

Microsoft Corp. recently shipped Site Server 3.0 Commerce Edition, but according to industry experts, the release only marks the first wave of the company's electronic commerce strategy.

According to analysts and industry observers, the latest Site Server is not so much a complete commerce tool but rather a foundation for third-party software development. (For a review of Site Server 3.0, see page 1.) And the slew of partnerships Microsoft announced a few weeks ago at the Site Server 3.0 Commerce Edition rollout in New York is an indication that the company is not willing to take on electronic commerce all by itself.

There have already been signs that Microsoft plans to add to the Site Server product line. For example, Microsoft recently bought Firefly Network, Inc., a Cambridge, Mass.-based company that specializes in analyzing customer profiles for market analysis.

Microsoft has positioned its two Site Servers (the standard intranet-oriented version and a Commerce Edition) as platforms for building intranets and extranets. Just like the intranet version, the Commerce Edition allows a user to manage and publish content for corporate Web sites. The only difference is the Commerce Edition adds basic purchasing, order processing and advertisement functions.

"Site Server is definitely not the total package that iCat [Corp.], Intershop [Communications, Inc.] and Interworld [Corp.] provide," said Steve Olsen, an analyst at Volpe, Brown, Whelan & Co. in San Francisco. Earlier this month, Interworld announced an alliance with Hewlett-Packard Co., whereby Interworld would provide its suite of products on the HP UX operating system.

Pandesic LLC, an electronic commerce provider formed from Intel Corp. and SAP AG, is one of Site Server's most visible allies. Pandesic announced it would embed Site Server in its end-to-end commerce offerings, which incorporate hardware, software and services.

According to Patrick Holmes, Pandesic's director of technology, the company was looking to incorporate log analysis, which provides information on who is visiting a site, and search functions. Site Server was the perfect match.

"Rather than worry about basic cataloguing, which Site Server takes care of, Pandesic can focus on its value added solutions," said Vern Keenan, an analyst at Zona Research, Inc. in Redwood Shores, Calif.

Pandesic specializes in supply-chain automation, which invokes the placement of supply orders when purchases are made, and business cycle analysis, which accounts for how changes in the business environment affect sales and supply.

Microsoft also announced partnerships with CommerceOne, Inc., DataCash, Ltd., ICVerify, Inc. and Great Plains Software, Inc., among others.

Site Server 3.0 Commerce Edition, including 25 client access licenses, is priced starting at $4,609 per server. ■

A Site Server for sore eyes

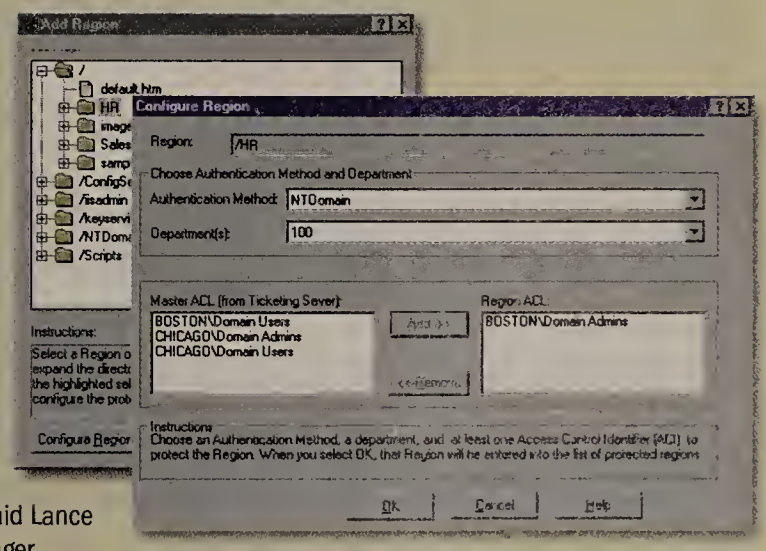
Microsoft's Site Server 3.0 Commerce Edition has features that surpass the content analysis, searching capabilities and publishing management available in the traditional Intranet version.

Feature	Description
Business-to-business	
Commerce Interchange Pipeline	Serves as a platform for preparing and exchanging data between electronic commerce systems and applications using EDI and XML.
Order Processing Pipeline	Manages orders according to specific business rules, such as taxes, shipping and handling.
Business-to-consumer	
Intelligent CrossSell	Predicts what consumers will buy based on gathered trends.
Ad Server	Hosts online advertising.
Membership Services	Tracks user preferences to deliver personalized content and authenticates users for access.

QUICK TAKE: WEB DEFENDER

Axent software restricts Web access

Axent Technologies, Inc. last week began shipping Web Defender, Windows NT software that restricts Web page access to authenticated users.



By installing Web Defender 1.0 on a dedicated NT server connected to an intranet Web server, corporations can decide which users have access to sensitive information. This control can be established based on the NT domain names in the NT directory.

With Web Defender's single sign-on technology, users can be assigned to role-based groups, such as sales, engineering, human resources and accounting, all areas in which there may be a need to restrict access to information, said Lance Urbas, Axent vice president and general manager.

Web Defender, which costs $5,000 per server, works by embedding a software ticket in a user's Web browser the same way a cookie is embedded. Each ticket controls which Web pages can be viewed by the user. "The benefit is there is no special client application required," Urbas said.

Axent: (781) 530-2200

'NET INSIDER

Why we do what we do

Massachusetts is running out of phone numbers — again.

Less than a year ago, two new area codes were carved out of the two area codes that have been serving eastern Massachusetts for years. We are now told the newly created area codes may run out of numbers as early as the year 2000.

Massachusetts currently has five area codes. Five area codes could theoretically support 49,999,995 phone lines. Even if one were to assume a good penetration of office phones, fax machines, cell phones and second lines to support teenagers, the ability to support nearly 50 million phone lines should not be all that confining in a state whose total population was 6,016,425 people in 1990.

Now the phone companies want to add support for 20 million additional lines. I don't think that many people have suddenly decided shoveling snow is a fun task and therefore it's time to move to Massachusetts.

The basic reason for this clear inefficiency is that the phone number assignment rules are severely limited by the technology of the phone system.

If I wanted to start a cellular phone service in an existing area code, I would go to the phone number assignment authority (www.nanpa.com), and if I met the authority's requirements, I would be assigned a block of phone numbers. The minimum size block of numbers that can be assigned is 9,999, even if I only have 10 customers.

This distribution process can result in inefficient use of the potential number space. The problem, combined with the demand -- *The Boston Globe* reports there were 57 requests for phone number blocks in one of the area codes during the week of May 11 --- means more area codes are on the way.

Scott Bradner

The Internet used to assign IP addresses in fixed-sized blocks like this, with block sizes of 256 hosts (class C), 65,000 hosts (class B) or 17 million hosts (class A). But this system changed a few years back with the development of classless interdomain routing.

The Internet address assignment organizations — the American Registry for Internet Numbers (ARIN) serves the Western Hemisphere and southern Africa — now assign IP addresses in power-of-two sized blocks. The size of an assignment is based on the actual size of the organization, backed up by concrete documentation. (ARIN's Web page is at www.arin.net)

The change in assignment procedures has dramatically moved back the time at which the 'Net will run out of IP addresses and thus, the time at which a switch to IPv6 will be forced by address exhaustion. There are other reasons organizations may want to migrate to IPv6, but it seems that the move won't be forced.

I hope the companies learn how to be more efficient because I'd just as soon not change my phone numbers. But the problem may cure itself if the projected Internet takeover of the phone system happens soon enough.

Disclaimer: Neither ARIN (where I'm a board member) nor Harvard (where I have an ambiguous title) does anything with phone numbers except try to remember a few of them.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

Now there's an affordable Token Ring switch with the **power** to boost performance **anywhere** on your network

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We've designed a Token Ring switch that is everything you need: affordable, powerful and easy to integrate into any Token Ring network. And we haven't stopped there. At no extra cost, the Smart Ringswitch Express comes loaded with advanced control features and graphical point-and-click management.

These include Madge's unique Active Broadcast Control (ABC™) which improves workstation performance by automatically filtering unnecessary broadcast traffic. And *full* Remote MONitoring support (RMON) which provides you with the insight you need to get proactive in managing your network.

In addition, this remarkable new Token Ring switch is High Speed Token Ring ready and has a full 1.5Gbps switching capacity – over three times that of other switches in its class.

So the decision is easy. Whether your network's handling transactions worth millions of Dollars or simply running office applications, the Smart Ringswitch Express is *the* affordable choice for scaling performance – now and into the future.

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Madge Networks

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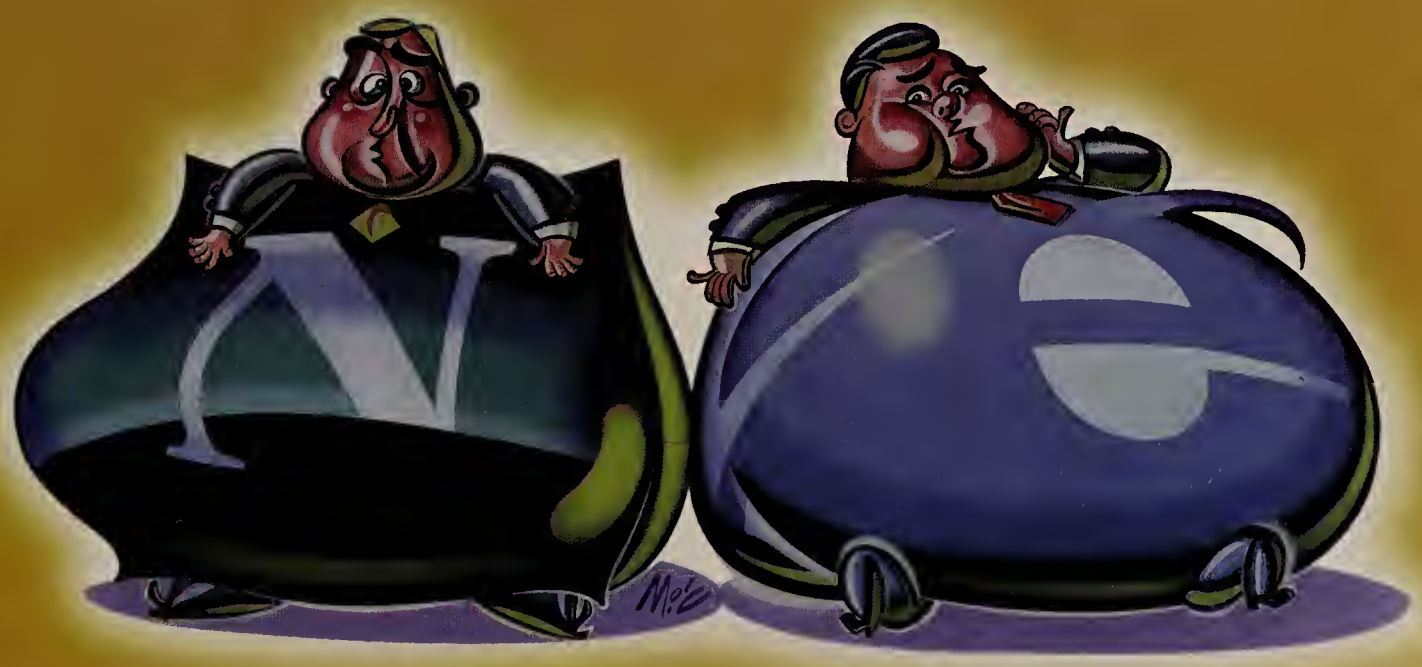
Capitalizing on Internet Technologies

May 1998

IntraNet

Browser Blast

As browsers become more capable, even morphing into operating systems, are they losing their most appealing features?



ALSO INSIDE • Handbook: Browser sensing • Comparative review: Internet monitoring tools • Advertising on intranets

A Network World Monthly Pullout Supplement

Are you planning to move your messaging onto a single platform?

Put down that crowbar and let's talk.

Unify.

There are a lot of solid arguments for putting everyone and everything onto one messaging platform. A company can't communicate when its e-mail systems spew gibberish at each other. A lot of older systems only know how to send e-mail. It's tough to manage umpteen different systems and directories. And the sheer volume of messages can slow e-mail to a drawl. Unifying your messaging platforms can solve these problems.

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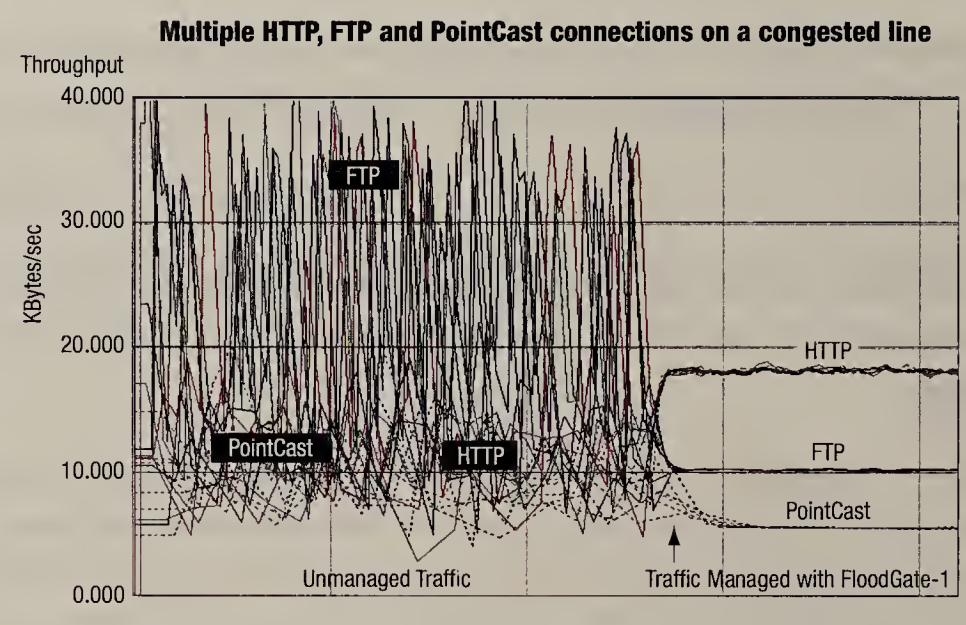

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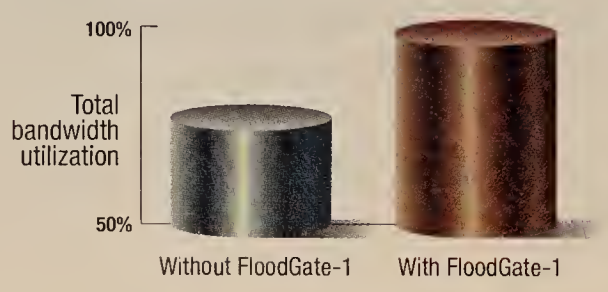

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CHECK POINT™
Software Technologies Ltd.

IntraNet

May 1998
Volume 3, Number 5

FEATURES

DEPARTMENTS

From the Editor

Netscape and Microsoft, diametrically opposed on so many issues, are partners in sin when it comes to browser bloat.

Netscape's Navigator started life requiring 6M bytes of hard disk space. The latest iteration needs more than twice that much. The next-generation Communicator needs about 30M bytes of hard disk space. Internet Explorer fares no better. Microsoft says the 4.0 release consumes between 25M and 60M bytes of hard disk space, depending on the options chosen.

To be fair, you do get a whole lot more with the later programs. While Netscape confined the first browser to basic Internet access, e-mail and newsgroup functions, for example, it has brought out support for security, frames, layers, advanced HTML, scripting and other fancier features in subsequent releases.

But intranet managers get wearier with each release. Sure, security and scripting are important, but some say other features inflate user expectations of what intranet developers can accomplish.

Basic browsing capabilities have so simplified users' lives that they think an intranet can do anything they want, and then some. After hearing, for example, that Internet Explorer 4.0 supports data and videoconferencing, they think the intranet should be able to as well — immediately.

What users don't realize is that intranet applications take development, and that that development requires people, time and money.

Netscape and Microsoft will no doubt continue their game of one-upmanship, but what intranet managers really need is better service and support for their existing lower end browsers. The vendor that can best meet those needs stands the best chance of winning the enterprise.

Beth Schultz
bschultz@nww.com

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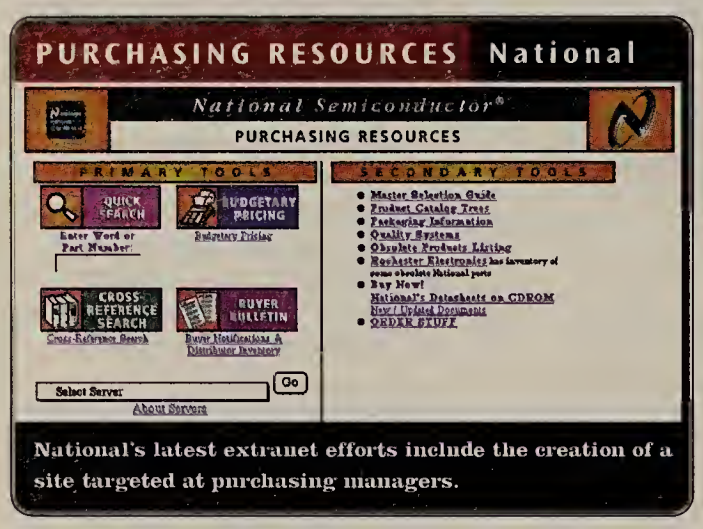
Your virtual connection to news bits, opinion, insight, humor and other marginalia from planet intranet.

hot links

National goes one-on-one with customer extranet

National Semiconductor Corp. is getting personal about its customer extranet.

The chip maker is asking its salespeople to create custom extranet pages for their customers. A corporate buyer for National customer 3Com Corp., for example, should be able to review corporate contracts, prices and lead times rather than just generalized sales information, says Phil Gibson, director of interactive marketing at National in Santa Clara, Calif.



National's latest extranet efforts include the creation of a site targeted at purchasing managers.

National salespeople use an internally developed tool to create, edit and maintain the Web pages through their browser interface and the StoryServer 3 publishing tool from Vignette Corp. in Austin, Texas. They don't need to know anything about creating a Web page, Gibson says. Salespeople simply use National's tool, called SiteCreator, to customize a page, then click "Publish."

Delivery of personalized customer pages is part of National's strategy for bringing buyers, purchasing managers and the direct and indirect sales force onto a company extranet.

SNA the intranet way

Guruge: Integration between the data center and intranet is only a matter of time.

Make way for the mainframes and AS/400s. If you haven't already pulled them into your intranet, you will one day soon.

So says Anura Guruge, IBM networking expert, consultant and instructor for *Network World's* technical seminar on integrating intranets and data centers. "An intranet that doesn't have access to the data center is like the proverbial apple pie without the apple," says Guruge, adding that an estimated 70% of vital corporate data resides on AS/400s or mainframes.

Guruge encourages IT managers to face the inevitable and to get excited about it. He recommends the following to prepare for the data center-to-intranet integration:

- **Identify applications that can be Web-enabled today.**
- **Identify call center functions that can be done over the Internet.**
- **Ascertain if you can address remote access needs via the Internet.**
- **Check when your 37XXs come off lease.**
- **Start work on an SNA-capable intranet architecture, whether it be via HTML, applets, middleware or a combination of technologies.**

Microsoft sets up intranet Office

It's a Webbed, Webbed world for the unnumbered successor to Microsoft Corp.'s Office 97.

Office 97, scheduled for shipment by year-end, goes way beyond the Internet Assistant translator that converts Word.doc files and other native application file formats to HTML for posting. Under Office 9X, users will actually be able to save their files to HTML format and use Extensible Markup Language tags.

Intranet users are the target of many new functions, from the browser interface to HTML support. Office product managers describe the integrated package as a "Web workspace" that encourages collaboration.

For example, browser-wielding workgroup members will be able to view and revise documents created in Word and insert tags in documents that, when clicked, will pop up comment boxes. In addition, users will be able to embed threaded discussions in documents.

Departmental content providers will most likely use the Web publishing functions in Office 97, while Webmasters will use FrontPage for Web page development and site management, says Deanna Meyer, an Office product manager.

Companies upgrading from Office 95 to Office 97 will be relieved to hear the next version of Office will retain the file formats of most applications, unlike the current upgrade.

IT at a crossroad

Market researcher and Crossroads conference organizer Nina Lytton shares her IT findings.

When Nina Lytton, president of market research firm Open Systems Advisors, Inc. (OSA), asks IT executives to share their world views, they talk.

And after they talk, Lytton publishes what she hears in the "Crossroads Decisions Report." Enterprise IT managers say issues such as business-to-business electronic commerce, customer service management and application development are on their minds, and that they are focused on applying Web technologies to these areas.

OSA's pool of IT visionaries forecasts a world in which "business decision makers can access knowledge, whatever the format and whatever the source, without being forced to consult multiple, separate islands of information," Lytton says. It sounds like an intranet, and Lytton acknowledges that a browser increasingly opens the door to that diverse data.

In fact, Web-enabled applications make up the bulk of the Crossroads 98 A-List Awards, an honor roll of applications and services the Boston firm published recently. Next on IT executives' wish lists are integrated Web-based business-to-business procurement and accounting; integrated marketing and service applications that reach customers through multiple channels; and browser-accessible knowledge management systems that link everything.

Making sense of browser identification

BY MARK GIBBS

Even if you've established intranet standards, you'd be wise to make sure your servers can identify what type of browsers are requesting information and can deliver content to them accordingly.

With browser sensing, if a nonapproved browser attempts to access content, the server can block the request and deliver a warning to the user.

On more open intranets, sensing can ensure that HTML 3.2 browsers don't choke when they come across nonstandard features, such as the layers option Netscape Communications Corp. offers in Communicator 4.01. A server would deliver different content to the HTML 3.2 browser than it would to the browser capable of viewing layers.

You also can use browser identification to prevent access by spiders, which are robots that explore Web server content. Spiders degrade performance if run indiscriminately by intranet users. Netscape's Navigator 4.0 and Microsoft Corp.'s Internet Explorer 4.0 use this type of functionality in their "push" implementations.

Implementing browser sensing requires some programming. You need a program that lets the server determine the browser type and a program that then lets the server act appropriately.

Client-side identification relies on the Web browser's ability to execute Java applets, VBScript or JavaScript, and requires recoding for each new browser release. We'll concentrate on the less complex server-side technique.

In server-side sensing, the browser announces its identity in the HTTP header it sends to the server when requesting a Web page. Let's examine one such header:

```
GET /company/aboutus.html HTTP/1.0
Accept: www/source
Accept: text/html
Accept: image/gif
User-Agent: Mozilla/4.04 [en] (WinNT; I)
```

The string following User-Agent: is the data the browser sends to back-end scripts via the Common Gateway Interface (CGI). Scripts read this string through the environment variable "HTTP-USER-AGENT."

If you are using a server API such as Netscape Server API (NSAPI) or Microsoft's Internet Server API (ISAPI), the browser retrieves the User-Agent string through API calls.

No matter which way your application gets the User-Agent string, it won't find a fixed layout — there's no standard for formatting the data in the User-Agent string. In general, browsers list an identifying name, their version, then platform details in parentheses. But because there is no standard, you've got to know the User-Agent string for each browser you want to identify.

In the header above, the identifying name is "Mozilla" and the version is "4.04." Netscape began using the identifying name Mozilla when it launched Navigator. Many browsers now use the Mozilla name in their User-Agent string to denote compatibility with Navigator. You could identify generic Netscape compatibility by looking for this name in the header.

The User-Agent string's nonstandard layout also is problematic because it tells you little of what the browser can do. If you want to send content that depends on the browser, you'll need to reference a database of browser capabilities.

Microsoft is a good resource for this information. The Active Server Pages (ASP) technology that comes with its Internet Information Server Web server software lets developers combine multiple programming languages to create dynamic content. ASP recognizes browsers and enumerates their features.

Microsoft stores this data in its browscap.ini database. You can download the latest version of this file from http://backoffice.microsoft.com/downtrial/moreinfo/bcf.asp. Its structure is straightforward, but too lengthy to cover here. We'll leave you to the decoding (the ASP books listed in the margins should help).

Once you know the browser, you can return the content requested or redirect the browser to alternative content areas. The latter is done using the redirect HTTP header.

If you just want to block nonsanctioned browsers, you simply look for User-Agent strings in a list of acceptable releases. If the string is not in the list, the server returns a warning rather than the page requested.

The server-side sensing application's design depends on your objective. For example, if performance is a consideration, you may only want to check access requests to browser-dependent content. If you need to check all requests, NSAPI or ISAPI would be better than CGI. Heavy use of CGI can hinder performance.

Server-side identification is worth the work. It provides a robust mechanism for enforcing the use of specific browsers or delivering the correct content to specific browser versions.

ASK DR. INTRANET

Please step in and lie down, Steve Blass is in for consultations. He understands the strains felt by people developing and managing intranets. Send your problems to dr.intranet@paranet.com.

I am writing an intranet application for Windows NT 4.0 and am looking for the media access control (MAC) and TCP/IP addresses for my workstation. Is this information in the Registry and, if so, is it encoded?

Arthur Jelsma, software developer in Watertown, S.D.

You should be able to find the Registry entry containing the network adapter MAC address by searching for the string "HardwareAddress." On my machine, I found the string under \System\CurrentControlSet\Services\DHCP\DhcpInfo00.

The value for HardwareAddress is listed in plain text. The Registry entry lists the MAC address as hexadecimal bytes separated by blanks: 'HardwareAddress 00 00 86 14 09 c7.' When you export the Registry information to a text file, the information appears as "HardwareAddress"=hex: 00,00,86,14,09,c7.'

You can find the TCP/IP address by looking for "DhcpIPAddress." The hexadecimal value is stored in the same blank-separated byte format as the MAC address.

Can you recommend some good, simple modem-pooling software to use with an NT-based intranet? We are running LAN-Source Technologies, Inc.'s WinPort software on a DOS Version 5, 386 machine. We recently upgraded to WinPort Version 5, which was almost impossible to configure.

Barbara Carlson, PC LAN support, Holmes & Narver, Inc., Orange, Calif.

There are other modem-pooling packages but for your DOS environment, WinPort is probably the most straightforward. The majority of modem-pooling options are built for Windows, and most require dedicated modem server hardware.

You could explore other outbound modem-pooling options, especially since you might face a Year 2000 problem with the 386. For example, you could replace the 386 with a terminal server or, perhaps, you could use the Internet, an extranet or a virtual private network. Using one of these options, you might be able to redeploy those outbound modems for dedicated inbound access.

Blass is a network architect at Houston-based Sprint Paranet, a distributed computing systems services provider.

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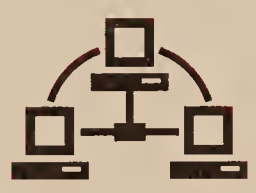

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COMPARATIVE REVIEW

Eye on 'Net users

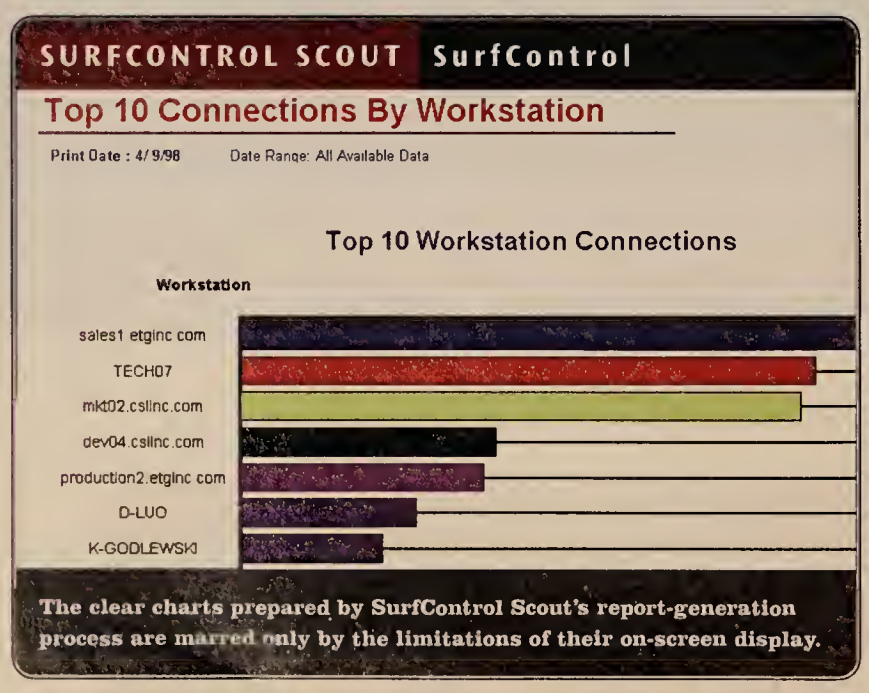
BY GARRETT MICHAEL HAYES

When intranet users begin indiscriminately surfing the World Wide Web, you'll want a tool for monitoring their Internet usage. We found Kansmen's LittleBrother the most helpful among three such products.

The explosion of Internet access from intranets presents organizations with the same issues they had when telephones appeared on every desk. Much as managers once had to set policies to regulate employees' long-distance and personal calls, today's IT administrators often need to monitor and control unproductive Web surfing.

We looked at three tools designed to monitor internal network traffic for patterns of use and abuse. While they provided similar functionality, Kansmen Corp.'s LittleBrother proved the best, especially in terms of ready and useful analysis. Elron Software, Inc.'s Internet Manager provided good flexibility, while SurfControl's SurfControl Scout was a trifle weak in clarity of presentation.

LittleBrother's dynamically updated analytic display (left) allowed us to quickly run an analysis on one user's activity. The bars show the time spent at each site. The red bar indicates the time spent at an unproductive site.



The clear charts prepared by SurfControl Scout's report-generation process are marred only by the limitations of their on-screen display.

Monitoring

The three packages provide similar monitoring capabilities, which are at their heart. Kansmen's LittleBrother doesn't present as much ready detail as the others — the company opted instead for a more graphical display — but you can drill down to useful information with a few mouse clicks.

We especially liked LittleBrother's dynamically updated bar chart. The bar chart shows traffic analysis in terms of users or sites visited, time or volume of traffic, and protocol used or the site rating (productive, neutral or unproductive).

The only negatives emerged when we found that the dynamic analysis only covered the preceding hour and that this was the only aspect of the default display we couldn't configure.

Elron's Internet Manager captures a lot of useful, detailed information, but its sorting and presentation of Web sites and page components is a bit clumsy.

Also on the downside, you must manually refresh the display, meaning you don't get a picture of current activity unless you specifically ask for it. A separate monitor application provided a real-time view of the most recent accesses, though in too cryptic a fashion for our tastes.

SurfControl Scout provides what at first seems to be the most detailed monitoring and recording, with features that let you quickly drill down to look at access patterns, even for individual elements of Web pages being visited. Unfortunately, SurfControl Scout monitors and records so many details, including outside workstations visiting the Web pages, that it was difficult to keep track of what was being generated internally. We could put all local stations into a group, but couldn't find a way to filter the on-screen display to just show that group.

As it is for Internet Manager, displayed information with SurfContol Scout is static until you execute a manual refresh.

Administration

Internet Manager is designed to be managed through a Web browser interface. However, we found that the pull-down menus of LittleBrother's administration program were better organized and made the administrative functions themselves easier to follow. Both of these products offered fairly feature-rich options, including scheduling reports, sending alerts and defining groups of users, workstations or sites. The tool set provided by SurfControl Scout was sparse by comparison.

For example, Internet Manager and LittleBrother let you categorize workstations into multiple groups; SurfControl Scout lets you assign a workstation to only one group. Multiple groups are useful when you want to classify a workstation as being in the accounting department and as belonging to a director, for example.

SCORECARD

Product	LittleBrother	Internet Manager	SurfControl Scout
Monitoring (35%) *	7	6	5
Administration (25%)	7	6	4
Reporting (20%)	6	7	5
Installation (10%)	8	4	6
Documentation (10%)	6	5	4
Overall score	6.8	5.9	4.75

*Individual category scores are based on a scale of 1-10. Percentages are the weight given each category in determining the total score.

Internet Manager had two considerable negatives in administration, however. First, the setup screen from which you define Web administration is ignored — our administrative functions appeared on Port 80 despite our setting them to a different port number. Second, there is a "reboot server" function that really means it. We expected it to reboot the Internet Manager administration services, but it rebooted the system with no warning or confirmation.

Reporting

Well-developed reporting features are crucial in an Internet monitoring tool. We examined on-screen interactive analysis and reporting as well as traditional printed reports.

Internet Manager has a wider variety of canned reports than either of its competitors. It also lets you schedule the creation of customized reports and e-mail results to designated recipients. You can set up the software to run a periodic analysis of traffic for a certain department and automatically e-mail the results to the department head.

Unfortunately, these reports, which are tailored for a print medium, are the basis of Internet Manager's on-screen interactive reporting. The reports don't fare quite as well as online tools, simply because they're not optimized for screen reading.

SurfControl Scout produces highly graphical print reports, with fairly good, succinct content. When displayed online, however, some of the reports run off of the screen to unscrollable locations. You can't see elements such as the keys to interpreting the graphs from these locations.

In contrast to the others, LittleBrother's reports seem intended more for on-screen viewing than printing. Most reports consist of either bar or line charts with only as much text as necessary to convey their message. You can click on a bar or line to get details about that item. For example, clicking on a user name in a report on activity by site brings up information on that user's activity.

However, it was here that we noted one big problem with LittleBrother's reporting. We looked at a filtered report, such as one for a particular time period, and then drilled down into it for further detail. The filtering remained in effect for the detail report, but nothing in it indicated the filtering criteria. In one case, we ended up with two reports showing different sets of activity by the same user, with no way to tell why they were different.

More important than the information in the report, however, is the interpretation placed on it. All three products seek to break activity down into meaningful categories such as productive vs. unproductive, or business vs. nonbusiness. Each approaches this problem in different fashion.

LittleBrother uses a database, which Kansmen updates twice monthly, of known sites with preconfigured group assignments — for example, computer, sports or hacking. The product clearly flags visits to sites such as those run by toy companies, sports networks and adult content providers. You can add new sites to the database, change the group to which a site is assigned, add new groups or change a group's rating — productive, neutral, unproductive.

The system isn't foolproof, however, and some of the failures were striking.

We visited a site whose name we made up because it sounded pornographic. The site, which actually existed, turned out to be shockingly obscene. Yet LittleBrother rated that site visit as productive, surprising us almost as much as the pornography on the site itself had.

In Internet Manager, Elron uses "dictionaries" to define characteristics of traffic in order to determine the nature of the activity.

For example, a dictionary might indicate that any file downloaded that has an AVI or MOV extension is a "movie." Another dictionary might indicate that site names containing certain key words are "suspect."

Internet Manager's reports categorize activity in terms of dictionary definitions. This lets you create a report with a list of all suspect activities or all movies downloaded by a given user, for example. The vendor provides several dictionaries; you can add more.

In contrast to the other products, SurfControl Manager puts the entire classification burden on the administrator. It requires you to go through the list of sites gathered by the system and assign each to a category, such as business, nonbusiness or none.

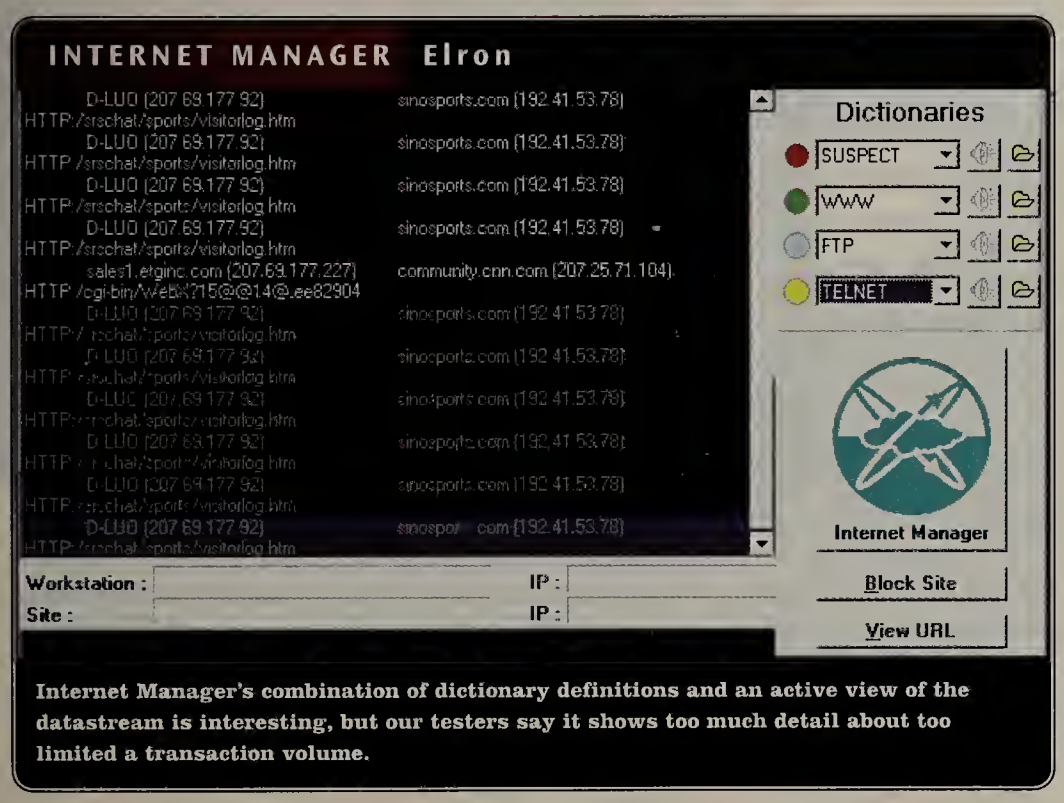
SurfControl assured us that customers don't find this seemingly daunting task too difficult and that the list of sites stabilizes quickly. Observing even our small network made the company's claim seem dubious.

One thing with which none of the packages dealt well was the issue of mixed sites.

Individuals and commercial sites may be hosted at the same ISP. Thus Joe's really useful page on NT widgets may be viewed as coming from the same source as Judy's dating service or Janet's Whips and Leather Emporium. None of these products is able to distinguish sites at this level of resolution.

PRODUCT CAPSULE

Product	Vendor	Contact information	Price	Pros	Cons
LittleBrother 2.0	Kansmen Milpitas, Calif.	(408) 263-9881 www.kansmen.com	$295 for 10 users	Excellent user interface, good analysis, ties in well to Microsoft Networking	Less detailed presentation of data
Internet Manager 4.5	Elron Cambridge, Mass.	(617) 692-3490 www.elronsoftware.com	$995 for 50 users, $1,895 for 100 users, $3,995 for 255 users, $5,995 for 500 users	Browser-based management allows control from alternate locations	On-screen reporting is somewhat clumsy
SurfControl Scout 1.8	SurfControl Scotts Valley, Calif.	(408) 438-8300 www.surfcontrol.com	$99 for 20 users, $299 for 100 users, $599 for 250 users, $999 for unlimited users	Highly detailed capture and presentation	Doesn't readily separate internal and external workstations



Internet Manager's combination of dictionary definitions and an active view of the datastream is interesting, but our testers say it shows too much detail about too limited a transaction volume.

Installation and documentation

None of the products was overly difficult to install, though Internet Manager had one snag that sent us into a brief spin. (Tip to administrators: Install these products while users are surfing the Web so you can see something is happening.) SurfControl Scout relies almost totally on the administrator having done lots of software installations and knowing what to look for during the process.

Go online for a description of how the review was conducted and an article on establishing usage policies for Internet access.

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While none of the packages had documentation sets belonging in the hall of fame, LittleBrother's was best, with Internet Manager running a close second. SurfControl has no printed documentation. Instead, the company puts its documentation online in HTML format. Because it's not searchable in this form, its usefulness is limited.

The bottom line

Taking everything into account, Kansmen's LittleBrother is the best integrated and most polished package of the three we tested. Its immediacy and graphical nature overcome its few reporting limitations.

Elron's Internet Manager has a richer set of reporting tools and automated functions, but configuration and management are not as simple. SurfControl's Scout is highly detail-oriented but not sufficiently analytical to be our tool of choice.

Hayes is system controls manager at Client/Server Labs, an independent testing lab in Atlanta. He can be reached at GHayes@cslinc.com.

Slam-dunk WEB TEAM

BY PEGGY WATT

The intranet team at Bristol-Myers Squibb is having fun in its race to develop Web applications. Participants include, from left to right: Janette Bubinak, Denise Allec and Kevin Pray.

What's in a name? Not much, since it's the applications that count. That's why, until recently, Bristol-Myers Squibb Co.'s intranet didn't have — or need — a name.

Barely a year ago, few of the 53,000 employees of the New York pharmaceutical and beauty products manufacturer were calling the intranet at all, much less by name. Most employees had browsers, but tended to point them outward, to the Internet, not inside to What's-its-Name and a smattering of static departmental pages.

Just a year later, Bristol-Myers Squibb's intranet still didn't have a name, but employees were calling it essential. Credit goes to information management (IM) efforts.

The IM group has cranked out an impressive handful of powerhouse Web applications. Automating existing tasks and initiating new, money-saving procedures using intranet applications contributed a significant proportion of the $1.1 billion Bristol-Myers Squibb saved last year through a cost-cutting initiative called Productivity for Growth.

PHOTOS JOHN RAE

Among the IM team's prize projects are applications that streamline cash projection reports; automate and speed transactions with equipment suppliers; track legal expenses; simplify government regulatory reports; and manage foreign currency exchange.

Name the intranet? Who had time?

IM staffers were busy making a name for themselves churning out Web applications in short order. "One person refers to us as the corporate Sherpas," says Denise Allec, Bristol-Myer Squibb's IM director. She has indeed led the company into an Intranet Age.

Allec joined the company in June 1996 and led IM to develop its first Web solution within months. A global purchasing group wanted an easier front end to a new corporatewide purchasing system using SAP AG's software.

Most employees already had Netscape Communications Corp. Navigator browsers. To launch the intranet, IM installed some central Netscape Web servers running under Microsoft Corp. Windows NT, says Kevin Pray, associate director of executive systems.

Users could access the Web purchasing system through their browsers and view the latest information drawn from Oracle Corp. databases.

Within months, the team took the browser interface to the purchasing system a step further. Outside suppliers with whom Bristol-Myers Squibb does business can log into an extranet to access the data as well. They can check for purchase orders, update order status and enter shipment information. Bristol-Myers Squibb users, in turn, can retrieve the vendor updates.

But the Web wizards were just getting started. IM really got serious about the intranet when the financial services organization approached it about designing an easier, faster way to share and compile cash-flow projections.

Operation fast cash

Nearly 2,000 cash-projection reports are filed monthly by Bristol-Myers Squibb organizations in 60 countries. Before the intranet, financial officers faxed the reports or sent them on disk by courier; often they were laboriously re-entered by hand into spreadsheets. "How about figuring out a way to let everyone access financial data in the mainframe, maybe via e-mail?" the financial services people asked.

Allec countered: "How about posting the financial reports on a corporate Web site?" Basic pieces were in place, and Allec says she didn't see any sense in extending the existing DOS system.

The financial group approached Allec in March 1997, asking for a prototype by April so it could test the system for three months before going live in July

Bristol-Myers Squibb's intranet team scores big points for bringing powerhouse applications to the company Web.

— in time to meet management's deadline for implementing the first cost-saving measures under the Productivity for Growth initiative. This financial application was the first of several intranet projects designed to meet the initiative's goal.

The programmers teamed with the financial analysts. "The financial group was excited to help with design and testing," says Janette Bubinak, an information management associate who helped coordinate the project.

Programmers actually began coding before the business requirements were completed in order to make the deadline. The effort took six weeks.

Besides implementing an Oracle database, IM standardized on Open Database Connectivity so application code would be transportable across databases. Developers wrote JavaScript routines so the financial planners could save their reports in HTML and publish them securely.

"The business requirements best fit the Web platform," says Doug Beddard, IM's associate director of financial systems. The financial planners wanted to use spreadsheets, but Web pages offered more collaboration, he adds.

After a whirlwind cycle of study, development, testing and deployment — including a pilot involving eight international sites "to be sure the servers could stand up to being hit from around the world at the same time," Bubinak notes — the cash-projection system was up by deadline.

The IM team was on a roll. Next, it teamed with the corporate legal department to design an application that solved a problem with which the company simply hadn't been dealing.

Bristol-Myers Squibb contracts with dozens of legal firms around the world for specific projects. The internal legal department wanted to get a better handle on this spending under the Productivity for Growth initiative. It came to IM in late 1996, and the interdepartmental team worked out project details.

First, the legal department required all outside counsel to submit billings electronically. Starting in mid-1997, outside firms deposited a standard form in a secure section of the Bristol-Myers Squibb extranet. By year-end, a new, automated review system was in place. Corporate counsel retrieves the billings and runs them through a Web-based application that compares the billed activities against Bristol-Myers Squibb's rules for the type, amount and fees for the work as negotiated.

The software highlights figures outside the norm, so any Bristol-Myers Squibb staff member assigned to review the billing can identify discrepancies at a glance. Reviewers also can drill down through the billing figures to find notes on the specific work and find explanations for aberrations. Then they may approve, question or refer the exceptions for consideration. An approved invoice then goes directly to the SAP system for payment.

"We hadn't even thought about putting the review system on the intranet, but it opened wide possibilities," says Sandy Leong, an in-house attorney who worked with IM to determine the business requirements and craft the application.

The legal department has expanded its intranet use and maintains an extranet home page for internal and contract counsel. The legal staff also has browser access to a broad selection of legal databases it uses frequently. Any such reviews previously were done by leafing through books.

Next, the legal department wants to integrate its Lotus Development Corp. Notes databases into the intranet.

Recycling helps

IM had established its reputation as a fast weaver of Web applications. Now requests come at a quick pace, and the group tries responding in kind.

IM develops reusable modules, primarily using JavaScript, J++ and C++, so components of one project provide building blocks for the next job. "Our logon screens are the same, our directory hierarchies, our drill-down processes can all be reused," Beddard says.

That's especially helpful for repeat customers. The financial systems group returned late last summer asking IM to make budgeting functions accessible via browsers. Next, it wants all collection and reporting systems on Web pages.

Another project, under way by request of the corporate treasurer, will monitor international currency exchange rates. The goal is to help Bristol-Myers Squibb take advantage of fluctuations in market value.

The team started setting requirements for this application in January and launched a pilot in March. The application monitors foreign exchange rates and lets users flag thresholds for transactions. Eventually, 113 sites worldwide will use it for $1 billion in spot transactions, Allec says.

AN INTRANET METHODOLOGY

Bristol-Myers Squibb's intranet development team cranks out applications based on experience and this proven system:

- Business unit or division representative presents a need or problem
- Combination team of IM and business unit identify business task
- Team develops requirements, defines business case (including cost benefit)
- Team draws up timeline, including pilot and launch dates
- IM picks tools based on type of information, functions needed, breadth of use (usually JavaScript, J++, C++, ODBC, PL/SQL)
- Prototype, test, pilot, review, deploy – globally as well as locally
- Add functions as application matures; don't rewrite

By now, IM has the routine down. In response to an request for help, a mixed team of IM and users identifies the business issue and develops a case and cost-benefit analysis. Participants determine basic requirements, define a deadline and start development. IM also offers advice, templates and tech support for groups to design and maintain their own pages.

"We're enabling business process improvements, and that's what we're supposed to be about," Allec says.

Oh, and that once anonymous intranet is nameless no more. A year ago, few employees knew the darn thing existed. Last month, many of them submitted names in a contest to christen it, just in time for this report. The moniker? PlanetBMS.

INTRANETS:

JON CONRAD

BY JOANN GRECO

Product marketers in 1996 earmarked $300 million for Internet advertising. By the year 2002, that figure is expected to swell to $8 billion, according to market research firm Jupiter Communications.

Combine this Web advertising phenomenon with the intranet build-up and you get . . . what? A match made in heaven? Not exactly.

In theory, the idea is delightfully, temptingly simple: Sell valuable banner space to an internal or external advertiser that wants to reach a target audience. Then use the cash to better fund and build the intranet.

But in reality, it's just not happening. Some companies have toyed with the idea of accepting or selling ad space on their intranets, but few have actually gotten beyond the notion.

"No one has even asked me about advertising on an intranet," says David Leveen, a principal at Cognitive Communications, Inc. (CCI), an intranet developer in New York.

And that's good — Leveen doesn't like the idea. "An intranet is there to accomplish many things. These include building a knowledge base, building communities of practice, helping smooth work processes and establishing thought leadership. When you look at these factors, you have to ask: 'Where does advertising fit in?' "

Some say the answer depends on the advertising itself. "If the idea is to get a packaged goods advertiser like Coca Cola buying ad space, then, no, companies don't really want employees distracted from productive endeavors," says Jim Nail, a senior analyst who covers Internet advertising for Forrester Research, Inc., in Cambridge, Mass.

Even if such ad sales might result in revenue, a company would need to consider the work needed to pursue and manage an effort that is not part of the core business, Nail adds.

Also a consideration: How would such ads impact intranet traffic? Coupons, contests and the like might serve as an incentive to visit a site. On the other hand, Web users often consider the presence of ads annoying, intrusive and something to be avoided at any price.

When private Webs become more like their public counterpart, indications are that the first banner-type ads will come from within the company. Mark Gallagher, vice president of technology administration at First Chicago NBD Corp., in Chicago, has mapped out a three-phase process.

In the first phase, certain departmental sites get preferential treatment, by size or positioning of relative links, on the upper-level directories of the bank's intranet. These directories get the most traffic.

On the most popular pages, links to new departmental intranet offerings are prominently featured, often by virtue of a small banner ad. One example is HR Connection, a new site that

the next ad medium?

Don't count on it, experts say. Advertising on extranets is a more likely first.

lets employees access information about their 401(k) balances, pension values and medical plans.

IT hasn't levied any fees on its constituents, nor is it likely to do so. "What I'm seeing is that the process of intranet advertising is becoming more formal. We're starting to limit, for example, how long a banner will remain on the home page," Gallagher says.

Amoco Corp., in Chicago, takes a different approach. The intranet team has allotted space on the corporate home page for internal ads. The ad spot gives business units the opportunity to promote their products and services to peers, says Betty Henry, a communications consultant at Amoco.

The advertisers pay for their spots based on the number of hits, says Henry, who discussed the strategy at a recent conference on intranets and corporate communications. "Any money we [earn] goes toward developing the intranet infrastructure," she says.

Others balk at the idea of such fees. "Hello? I thought we were on the same team. Information should not have a price tag attached to it," Leveen says.

KATHLEEN KING

At First Chicago NBD, IT is content waiting for fees that will come with phase two, Gallagher says. Here, the bank would let vendors advertise on the intranet or, more likely, an extranet.

Many experts agree the fee-for-ads model that might work lays somewhere between selling ads to fellow workers and accepting big dollars from the moneyed product makers that fill our bellies and satiate our fantasies. That in between place will likely be an extranet.

"Advertising makes a ton of sense for extranets," says Dan Fine, a principal of Fine.com Interactive, a Web developer in Seattle. "I can see it being used for products and services that approved vendors, franchisees and customers might be interested in."

"Sponsored" intranets follow a similar model. Dave Russek, senior vice president of strategic development at US Interactive, a digital marketing agency and Web developer in New York, advocates this scheme.

For example, a software firm developing HTML authoring tools might underwrite the cost of US Interactive's intranet because it wants to reach programmers and designers.

The ideal sponsorship should reflect the culture of the hosting company. In US Interactive's case, appropriate sponsors would be youth culture marketers such as Coca Cola or a game magazine publisher, Russek says.

It's a revealing lineup that's pretty far removed from more workplace-friendly, information-based marketers such as technology and healthcare providers. It remains to be seen how employees will take to yet more ads. Will they regard them as good information, time-wasters or, worse, crass salesmanship?

At First Chicago NBD, external advertisers would come in phase three, admittedly a ways off. Gallagher uses the example of Marshall Field's, a downtown retailer. "I can see showing Field's hits per page, descriptions of employee demographics and information on the range of incomes," he says.

And then what?

"We could sure send Field's a lot of buyers of blue suits," Gallagher laughs.

Greco is a freelance writer in Philadelphia.

BROWSER

As browsers become more capable, even morphing into operating systems, are they losing their most appealing features?

BY PEGGY WATT

They started life nice and trim, neat little packages tailored to provide only the most basic Internet access and communications functions. But my how browsers have grown.

Like a Weight Watchers flunkie with a penchant for peppermint patties, Netscape Communications Corp. and Microsoft Corp. just can't seem to stop loading their browsers with little goodies — a bewildering array of features, add-on options, HTML extensions, plug-ins and helper applications. The more bloated browsers get, the more we've got to ask the question: Are we squandering the browser advantage?

Microsoft and Netscape each answer with a resounding "No." These browser bastions think they've only just tapped the surface of the browser's potential and that IT managers have yet to fully experience the software's advantage.

Each company positions its browser as the gateway to all data, whether it's on the desktop, the enterprise or the Internet. Microsoft plans to integrate Internet Explorer into Windows 98, which is due out this summer. And Netscape built a wealth of enterprise applications and utilities into its next-generation Communicator, turning it into a client environment that includes a browser.

The frequency of the major browser updates makes the situation more dramatic — Netscape and Microsoft have gone from zero to 5.X releases in just over three years. The more they add, the more they diverge. Microsoft favors its ActiveX technology, for example, and each has its own implementation of Java and broadcast technology. The products — and the challenges to IT managers — just keep growing, especially as companies extend their intranet to customers and other business partners.

Collision on the extranet

Developers at Volkswagen of America, Inc., in Auburn Hills, Mich., are frustrated that proprietary implementations of Java or other languages can defeat the opportunity of the browser's openness.

VW has adopted Navigator 4.0 for intranet access and uses Java, custom MIME types and other Navigator-specific functions. But company Web developers are reluctant to use these same functions on the extranet because some VW partners run Internet Explorer, not Navigator.

"Now what? Do we require all our dealers to use Netscape browsers, or do we change our design, or do we try to support both and treat the extranet like the Internet?" asks Dan Goussy, IT manager at VW. For the foreseeable future, VW is taking the latter approach.

Goussy's peers at Chrysler Corp. have confined most of their customization to the server, but require visiting browsers to support Java. Chrysler is counting on Java being widely used and its implementation being generic enough to duck any browser peculiarities, says John Kay, electronic commerce manager at the car maker, also in Auburn Hills.

Another intranet project manager, Ricardo Cole of Informix Software, Inc., in Menlo Park, Calif., struggled with a number of minor but annoying browser incompatibilities because of differences in how Navigator and Internet Explorer handle HTML code. On the intranet, Informix developers are free to experiment with the latest and greatest features, such as Java, dynamic HTML and cascading style sheets, because the company has standardized on Navigator 4.04. Internet Explorer also supports these features, but differently enough that Cole discourages extensive use on Web pages accessed by company outsiders.

Honeywell, Inc. Project Manager Wayne Thayer says he has compromised the richness of the intranet environment by having to support both browsers. In particular, he struggles with deviations between Netscape's JavaScript and Microsoft's JScript. About two-thirds of the users at Phoenix-based Honeywell run a version of Navigator; the rest use Internet Explorer 3.X.

"You can't test everything," Thayer says. "And you can develop a much richer environment if you have homogeneity on the desktop."

Enough's enough

Some intranet managers are turned off by the browser bloat.

"The new browsers give users more than they need," says Diane Walters, network analyst at Symbol Technologies, Inc., in Holtsville, N.Y.

After some recent evaluation, Symbol is standardizing on Navigator 3.02, choosing other than the very latest browser version because its functions serve users' needs without overloading them with features.

Navigator's successor Communicator is overkill at this point, agrees Forrest Jerome, director of technology information systems at Colgate-Palmolive Co., in Piscataway, N.J. The company uses Lotus Development

BLOAT

Corp. Notes groupware software and is migrating to the Lotus Domino Web offerings, but will stick with its early choice of Navigator.

Intranet managers can assert a browser mandate, but users often clamor for updates nonetheless. Some users even shun policy and download the latest versions without IT's knowledge. So it is a rare and fortunate corporate IT department that does not expect to support a potpourri of browsers.

Digital Equipment Corp., whose users started browsing its intranet with Mosaic in 1994, takes that expectation to the extreme. Digital is so committed to supporting a variety of browser capabilities that its Web page designers produce every intranet page in four versions: Java, Java with tables, text-only and non-table pages, says Kathleen Warner, director of Digital's Internet/Intranet Deployment Office.

Creating redundant Web pages causes extra work, but Digital stands by its procedure. Developers rely heavily on templates to smooth duplicate development, and IT is implementing page sensing so browsers will automatically call up the appropriate version. Until then, a pop-up box asks users which page version they want.

"Corporate IS strategy is to have all systems Web-enabled and have the browser be the access tool of the desktop," Warner says.

That's got to make Microsoft and Netscape happy. It's what they've been preparing for.

Netscape introduced Navigator 1.0 in December 1994, suggesting users run at least a 386sx system with 8M bytes of RAM and 6M bytes of hard disk space. A brochure boasted "everything you need for Internet access," including full e-mail capabilities, a newsgroup reader and MIME support, along with "an easy and intuitive interface."

In August 1995, Microsoft at the last minute bundled Internet Explorer with Windows 95 instead of shipping it a few months later in a Plus Pack as scheduled. Its Internet Explorer recommendations echoed the operating system: a 486 processor, 8M bytes of RAM and 35M bytes of hard disk drive space.

Each update has boosted system requirements along with refining and adding features. In the 2.0 releases came new security functions, frames, advanced HTML and scripting support. But with each vendor's 3.0 release, the browsers gained weight of applications, primarily multimedia players and broadcasting channel capabilities.

With Navigator 3.0's June 1996 release, Netscape CEO Jim Barksdale noted, "We don't call it a browser anymore. Browsing is only one of the many capabilities of this client software." The comment gets truer with each upgrade.

Upon shipping Communicator in June 1997, Netscape relegated the browser to one of many applications, including groupware and conferencing utilities, a calendar, editing tools and e-mail.

As they bulk up their browsers, Microsoft and Netscape also keep light editions. Navigator 4.02, equivalent to the browsing functions in Communicator, is available as a stand-alone program. It requires 15M bytes of hard disk space, half of the capacity needed for Communicator but more than twice that of the original.

Microsoft offers several versions of Internet Explorer 4.0. The full release, which includes NetMeeting and FrontPage, consumes 25M to 60M bytes of hard disk space, depending on the options selected; the standard version, which provides the browser and the e-mail client Outlook Express, takes up 16M bytes; and the browser only is 13M bytes.

Internet Explorer 4.0, with its slew of applications, is essentially the product Microsoft built into Windows 98, says Craig Beilinson, an Internet Explorer product manager at the software giant. Microsoft will continue to develop and release Internet Explorer singly and for other platforms even after it integrates the browser into Windows 98, he adds.

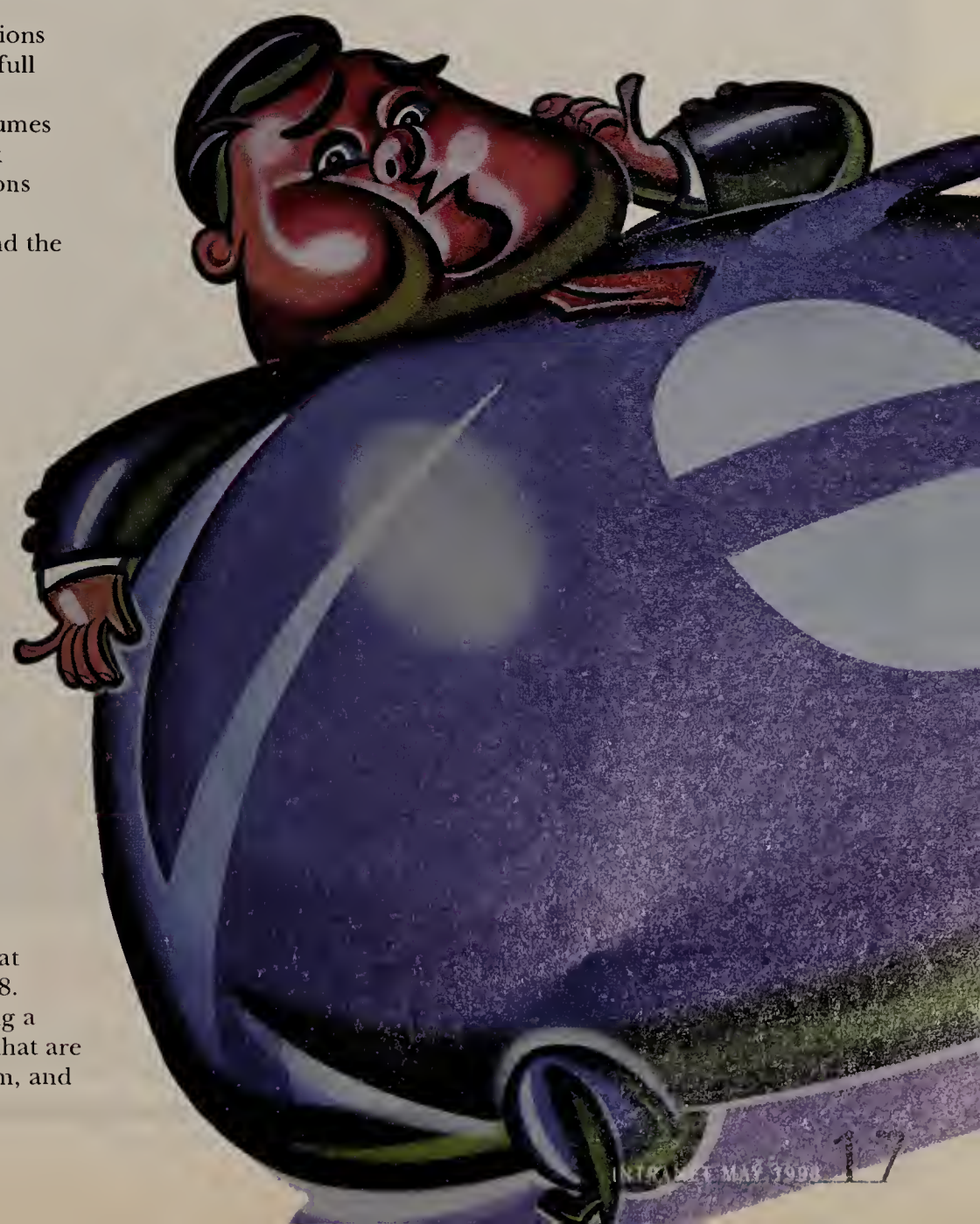
Integrating the browser with the operating system will not necessarily boost the Windows footprint. "We have a lot of shared code libraries," Beilinson says. "That will continue with Windows 98. Internet Explorer is leveraging a great number of system files that are built into the operating system, and third-party functions can use them as well."

Users with high-end systems will have another option in Windows 98. Microsoft is working on a multimedia Web browser, code-named Chrome, designed to support 3-D animation and sound.

For its part, Netscape expects corporate customers to integrate Communicator with enterprise applications.

"They want to deploy Communicator into their own information systems, taking advantage of its e-mail and other intranet document-sharing functions," says Michael LaGuardia, a Communicator product manager.

MITCH O'CONNELL



Done deal

Browser-as-desktop is a given for some industry-watchers.

"It's long been our belief that the browser as a discrete part is going to go away. It's going to be part of an environment," says Harry Fenik, a vice president and analyst at Zona Research, Inc., a market research firm in Redwood City, Calif. A capable, intuitive and integrated desktop could result.

"Internet Explorer 4 makes the assumption that you use the Internet or intranet as part of your desktop," Fenik says. "Microsoft is trying to eliminate the discrete barriers between commands like HTTP, FTP and File Open."

Users do have a few options if they don't like this approach. Still available are a handful of simpler browsers. Among the best known are the text-based Unix browser Lynx, a product of the University of Kansas maintained by the Internet community, and a browser marketed by the Norwegian firm Opera Software A/S.

And one other frequently mentioned potential solution is network computers or other thin clients that run streamlined browsers and put the computing burden on the server.

"We like server-side technology. We don't want to have to worry about what [business partners'] browsers are."

JON MURESAN

— John Kay, electronic commerce manager, Chrysler Corp.

"It's expensive to keep a PC on everybody's desk, so the future of the smaller network boxes is interesting," says John Minteer, system integration manager at Cubic Corp., in San Diego.

Minteer is keeping an eye on such devices, but is in no hurry to invest in new hardware shortly after buying dozens of PCs. The lure? "The vendors will have to sell these on the lower cost of ownership, reliability and performance," he says.

Another variation is letting the server do more of the work, as Chrysler does.

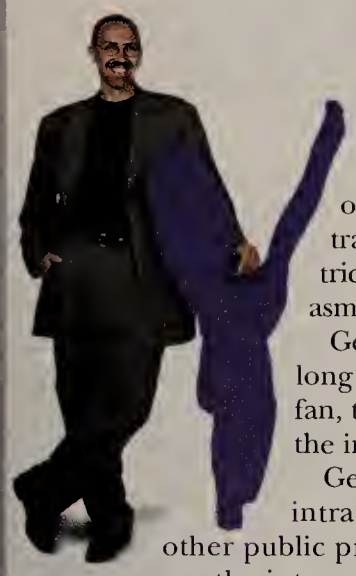
"Why ruin the simplicity of the browser with Java applets or ActiveX?" asks John Telford, principal at Infomax Consulting, Inc., in Portland, Ore. "Don't send me junk food, send me pure HTML." Keep the browser simple, and run the complicated and hefty code on the server, he says.

"We can squander the browser opportunity in the static world," says Richard Tanler, chairman of Information Advantage, a business analysis software company in Minneapolis. "This is not about providing Excel in the browser, it's about providing the content with the Excel logic. That means we have to keep as much out of the browser as possible and keep all processing on the server," he says.

Microsoft, it seems, is taking criticisms of browser bloat to heart. It is looking into configuring a browser with a small footprint that could dynamically load features it needs as it hits particular Web pages, Beilinson says.

It's a delicate line to walk between size and performance. Many IT staffs are eager to take advantage of the broad range of new functions, from multimedia to modular programming, but most are still trying to figure out whether bigger really means better.

Intranet Diplomacy



You've provided your users with editing tools and training and have turned them loose. Now comes the tricky part. You've got to pump up those users' enthusiasm about publishing and researching on your intranet.

Getting the CEO committed to the intranet will go a long way toward helping your cause. If your CEO isn't a fan, the rest of the employees may not get fired up over the intranet, either.

Get your corporate head honcho to post on the intranet messages to the troops, corporate reports and other public pronouncements. In fact, encourage your CEO to use the intranet for anything he otherwise would have committed to paper.

Once you've gotten the CEO on board, your next targets are department heads and line managers. If trying to get these folks to support the company intranet proves too difficult, you'll have to work around them.

Unless you want to be known as a corporate gorilla, you might want to take a subtle approach. The following is a list of ways to nudge intranet users while being diplomatic.

1. Hold competitions, making intranet users the judges. A good challenge would be coming up with the best departmental profile, for example. You could reward winners with a pizza party hosted by the intranet development team.

Or, if the budget allows, you might buy a few digital cameras and loan them to users for photographing their holidays, children or pets. The person with the best online gallery gets a camera.

No matter what the competition is about, remember to keep focused on the publishing of information. In other words, don't get caught up in just data and the quality and organization of the presentation.

JOEL NAKAMURA

2. Offer an online company magazine as a replacement for a paper version of the same thing. The magazine should include corporate and private announcements, classified ads, sports events — anything fit for publication, really. Also, make sure the magazine announces intranet events, such as availability of new resources and sites.

3. Encourage human resources staffers to stop answering questions over the phone about basic issues such as leave entitlement. Instead, have them refer callers to the intranet. You will have to be a little cautious, of course, as some staff members will balk at having to use a computer at all. On the other hand, HR personnel should find it easy to support this stratagem given that it will ultimately reduce their workload.

4. Make external content available on your intranet. This might include newsfeeds, competitive information (including screen captures of Web sites), mailing lists, selected newsgroups and local information. This last category can be a powerful draw if you provide mapping services, white and yellow pages and pointers to Internet content related to local interests.

5. Award a prize to the department or individual who has posted the information that is accessed most frequently each month. Note, however, that you may have to exclude some departments, such as IT and HR, from the running because of the ongoing popularity of their information.

6. Create frequently asked questions lists for addressing subjects users commonly need to discuss. Each department must contribute and maintain an FAQ that covers at least the basics of its functions and explains who's who within the department. Make sure FAQs are visible to search engines.

7. Post e-mail summaries of new content that is relevant to each department and, ideally, to individual users. But don't overload users with too-frequent bulletins. If you do, the impact will diminish.

8. If your budget allows, give individual users or workgroup teams a device such as Visioneer's Paperport, a single-page color scanner that only costs about $200. A device such as this lets users compile information for publishing much faster than if they have to request scanning from the IT group's Web design staff, for example.

Add optical character recognition and a Web publishing tool kit for an additional $50 each, and you've got a powerful way to support user publishing on the intranet.

9. Put all frequently used forms online. The forms for ordering telephone service or consumer items such as stationery are prime targets, as are more complex forms for capital requisitions.

Posting forms online will cure a number of administrative headaches. The departments dealing with the forms are likely to be your biggest supporters — they'd welcome with open arms anything that reduces paper clutter and streamlines the work.

There you have them. These nine methods of stimulating intranet use are simple to put into practice and all work by persuasion rather than force.

And, please, remember the old maxim: "Diplomacy is letting them have it your way."

Do you have any intranet stimulants? Gibbs can be reached by sending e-mail to imcolumn@gibbs.com or leaving a message at (800) 622-1108, Ext. 7504.

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My company recently installed Novell, Inc.'s Hostprint/400 to allow several LAN-based printers to service print jobs from our AS/400. I've been seeing a problem with Hostprint losing its connection when the AS/400 is "IPLed" weekly or more frequently. Can I configure Hostprint/400 to reattach automatically when the AS/400 is back online?

Via the Internet

Unfortunately, because of the way Hostprint/400 uses NetWare's print subsystem, there is no way to make Hostprint/400 reattach automatically after an IPL cycle. (IPL is IBM terminology for an orderly shutdown and restarting of an AS/400.) This can be a hassle when you IPL an AS/400 frequently, as in your case.

Instead, you have two options. You can create an NCF file — NetWare's version of a DOS batch file — that unloads and then reloads Hostprint/400.

Or you can use a CRON-type NetWare Loadable Module that can schedule the unloading and later reloading of the Hostprint NLM. If you opt for the latter approach, you'll have to coordinate closely with the MIS staff running the AS/400 on a schedule that unloads Hostprint/400 just prior to the IPL and then reloads Hostprint/400 after the AS/400 is back online.

The best solution probably involves both options. The scheduling of the loading and unloading of Hostprint/400 assumes a consistent cycling of the AS/400.

Because it is likely that MIS may apply AS/400 system updates at times other than at regularly scheduled intervals, you may occasionally have to restart Hostprint/400.

Before starting this type of configuration, make certain you've applied the latest updates to NetWare for SAA and Hostprint/400.

Telco protocol could boost Internet services

By Shuang Deng

Today's familiar telephony features — such as caller ID, call waiting and 800/888 numbers — are intelligent value-added services made possible by a protocol called Signaling System 7 (SS7).

SS7 is a switch-to-switch protocol that lets telephone switches set up calls, manage circuits and perform intelligent network functions. The SS7 protocol is a standard that has been defined by the International Telecommunication Union (ITU), the American National Standards Institute (ANSI) and other groups.

While SS7 has enabled new telephony features, an emerging idea is that by combining SS7's intelligent features, the protocol could help make the Internet more reliable, efficient, scalable and easier to use, thereby benefiting telcos, ISPs and end users alike.

A typical SS7 network has signal switch points, signal transfer points and signal control points. They are analogous to the end-node, router/switch and routing table database in the Internet, respectively. For redundancy, a signal switch is typically connected to two independent signal transfer points.

Signal switches originate, terminate or combine multiple calls onto a single pipe. The switch signals other SS7 switches to set up, manage and release voice circuits required to complete a call. A signal switch may also send a query message to the signal control point, which acts as a centralized database for routing instructions, such as how to handle 800/888 calls. An alternate routing number may be used by the switch if the primary number is busy or there is no answer.

Network traffic between signaling points is handled via a packet switch. The device routes or switches incoming messages to an outgoing signaling link using routing information within the multitiered SS7 message. Acting as a network hub, the packet switch improves SS7 network utilization by eliminating the need for direct links between signaling points.

The SS7 environment provides rerouting, error correction and retransmission capabilities for continuous service in the event of signaling point or link failures. Because SS7 has more intelligent capabilities than User-Network Interface protocols such as ISDN Primary Rate Interface, SS7 can help ease congestion across the Internet.

Using SS7 instead of PRI, with a network access switch or modem pool, a network provider should be able to support more calls and be able to more easily scale to support larger volumes of data.

Unlike traditional signaling methods, such as channelized T-1 and PRI, SS7 is not terminated directly at a network access switch because of limited address space and security considerations. An Internet network control device, which could be a separate router or switch, is typically used between the SS7 network and multiple net access switches.

The Internet control device plays an important role. The switch or router is more than just a gateway to translate SS7 messages for the network access switch. Because the SS7 network is critical to the health of the public telephone network, the device must provide security to block unauthorized messages from getting on the SS7 network. To provide tight integration with the phone network, the Internet network control device must support the reliability features integral to the SS7 capabilities, not just the call setup control.

Ultimately, SS7 could help the Internet by providing:

- **Improved reliability.** Reliability derives from extensive continuity testing capabilities within the SS7 protocol. For example, network providers can initiate an automatic loopback test for all calls just like in a voice network. When problems arise, such as circuit or modem card failure, the access switch automatically signals the network to reroute the calls to another switch without affecting the service.
- **Better bandwidth utilization.** Because SS7 signaling takes place out-of-band, meaning it uses no bandwidth from calls, SS7 uses less expensive and more readily available regular DS-1 or DS-3 ports on the telephone switch.
- **Load balancing.** When one network access switch is busy, the Internet network controller can redirect SS7 messages so that subsequent calls to that location automatically go to an NAS with free capacity. This means more efficient use of ISP equipment and no busy signal.

All major network vendors have announced plans for future support of SS7 in their remote access switches.

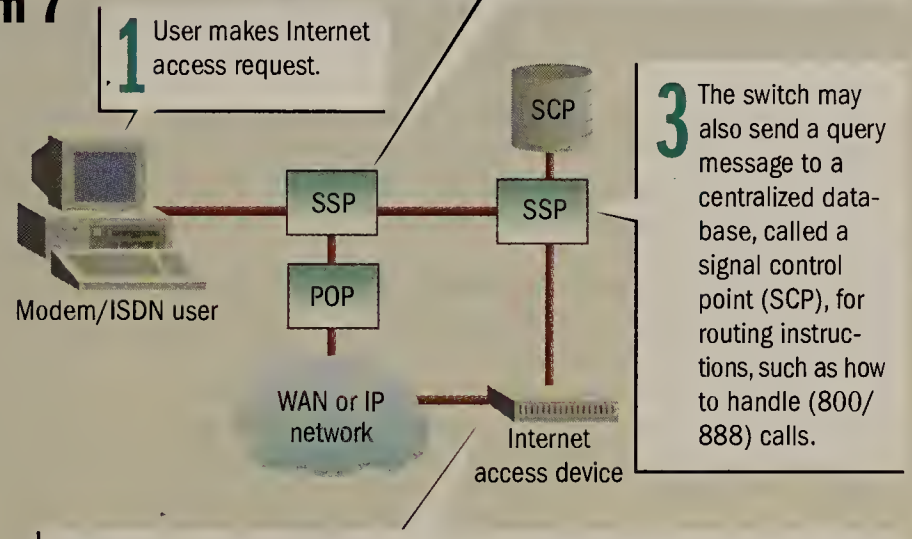
Nortel has released such products, and other major network vendors such as Cisco Systems, Inc., Lucent Technologies, Inc. and 3Com Corp.'s U.S. Robotics division have followed suit and announced plans for future support of SS7 in their access switches. Telephone companies are interested in deploying SS7-capable access switches to offer new services and to offload the Internet dial-up calls from the voice network.

Deng is director of product management at Aptis Communications, Inc. in Chelmsford, Mass. He can be reached via e-mail at shuang@aptis.com.

HOW IT WORKS

Signaling System 7

SS7 is a standardized switch-to-switch protocol that lets telephone switches set up calls, manage circuits and perform intelligent network functions such as database lookups. As the backbone components of a large IP network or the Internet, SS7 switches can ensure that fax and data calls are handled differently than voice calls. Voice call routing can then be optimized to improve network availability and costs.



EDITORIAL *insights*

The view from Vortex

On my way to Vortex 98 — an invitation-only gathering of Internet and telco industry movers and shakers — I was taxied from the Orange County Airport to the Ritz-Carlton Laguna Niguel by a part-time minister who called himself a "teacher/elder" and described how he spoke in tongues. Based on my persistent questioning about that practice (I'm nothing if not nosy), he said I appeared to be seeking something in my life and offered to help me find that missing thing. Our meeting, he assured me, was preordained.

Preordained? Maybe. Seeking something? Definitely. But I wasn't the only one seeking answers last week. The CEOs, directors, presidents, entrepreneurs, venture capitalists and high-powered consultants at this Bob Metcalfe-organized gig were also speaking in tongues: IP, ROI, VPNs, WDM. And they were desperately seeking to know whether and when the Internet will replace the public switched telephone network. Is IP really the only way to go? Most important, how can I make money out of all of this?

Sadly, there were no clear answers to those questions. But some things did become eminently clear. For example, while we innately understand that data traffic is overtaking voice, the actual pace at which this is happening is staggering. Data traffic is growing at some 300% annually, and that means data traffic will soon dwarf voice.

What's also mind-boggling is the capacity being built into the backbone by carriers to handle that load. We're talking tens of terabits per second of capacity.

Will that buildout keep pace with the exponential increase in data traffic? No one can say. A lot depends on what happens at the access level of the network — that last mile choked off by the regional Bell operating companies today. Depending on which technology wins in that arena, the backbone could be swamped by even greater demand.

From a network manager's perspective, one thing became very clear. Now's the time to get to know the new carriers, such as Qwest, Level 3, IXC and Williams Telecommunications, building broadband IP nets. They need and want your corporate traffic and will find ways to market their capacity at aggressive prices.

As one speaker said, these carriers are shooting for the moon with the fast ramp-ups of their networks, so they're better positioned to prosper in the new world order. The older carriers — hidebound by tradition, regulation, bad business practices or just lack of vision — could quickly be left behind.

This new breed speaks in the tongue of the Internet and, when you see the predictions of the future, the carriers' ideas make a lot of sense. They might just be able to help you find what you are seeking.

John Gallant, editor in chief jgallant@nww.com

Network Management • Richard Ptak

In distributed net management, go with fit before function

With reports of implementation failure rates hitting 90% or higher, one would think customers would be abandoning distributed network management platforms in droves. On the contrary, if vendors are to be believed, the demand for such products keeps growing. So what's the story?

Over the past five years, providers of distributed net management tools, platforms and frameworks have focused on the functionality their wares offer. Comparison articles have attempted to influence users' purchase decisions with lists of product functionality, weighted to reflect the importance to users. One such report showed two vendors as satisfying virtually all the needs of any network manager.

Has distributed network management nirvana arrived?

Hardly. It's a mistake to base the suitability of a product solely on functionality.

Don't get me wrong; there is nothing inherently bad about judging a product by its functionality. In fact, doing so helps us to identify minimally acceptable feature sets. However, as the market matures, any feature inadequacies can be addressed through partnerships or by focused development efforts. In the end, feature/function analysis alone presents far too narrow a basis for product selection.

So what are the other valid criteria?

First, the scale of the product should fit the problem. You don't need a tractor to plant a backyard garden. Don't attempt to select and install a totally integrated enterprise framework when all you really want and have authorization to do is maintain files.

Spend time and effort to ensure you have identified the real problem, not just the symptoms. For example, say an application regularly fails to complete on time, delaying bill processing. Is the problem poor application design, timeouts during data seeks, inadequate network bandwidth or the access priority of the disk where the data resides? Identify and correct root causes.

Follow a disciplined process for determining corrective action. It may be tempting to purchase a more powerful server for that failing application, but it won't solve a problem of inadequate bandwidth. Don't get distracted by attempting to throw money at all problems, assuming you have that luxury.

Second, consider how a solution's design concept fits your environment's operations concept. The design concept is the driving vision behind the implementation of any product. For some platforms, the design concept is the ability to monitor and respond to network events as they occur. For others, it's the ability to define and distribute the responsibility for management policy implementation.

The design concept reflects the environment in which the architect and development staff believed their creation would operate. It influences everything from functionality to interface to analysis.

Your environment has its own embedded set of assumptions, presumptions and priorities. These will influence what is expected from a distributed management system, how easy it is to implement and how successfully it operates. Is the focus on managing the consistency of management policies, managing network events or monitoring the flow of information between the mainframe and the client/server environment?

Today's distributed management products can be made to fit into varied environments. However, the closer the design concept fits your mode of business, the more rapid the payoff.

The continuing demand for distributed management products reflects the seriousness of the underlying problem: the fight to keep ahead of the weedlike proliferation of complex computing environments.

Instead of trying any tool that promises some level of success, choose one that fits your operational style.

Ptak is vice president of enterprise management solutions at D.H. Brown Associates, an industry research and consulting firm in Port Chester, N.Y. He can be reached at rlptak@dhbrown.com.

MESSAGE QUEUE

Send letters to nwnews@nww.com or John Gallant, editor in chief, Network World, *161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.*

Outage aftermath

Regarding your article "AT&T frame relay service goes down for the count" (April 20, page 7):

Having been in the telecom business for 18 years, both as a consumer and as a service provider, I find several things in the article disturbing. First, referencing a "giant pharmaceutical company" hiring six jets to deliver paper orders is a bit sensational, don't you think? In an age where e-mail or fax machines could be used to deliver such documents quickly, and overnight carriers such as UPS and FedEx make a living doing just that, this statement is truly unbelievable. If it is true, then the telecom manager and chief

So you want to be a hacker?

Network administrators, security professionals, corporate managers and the Department of Defense — to name a few — are fighting to defend their Internet connections, intranets, corporate assets and indeed their jobs in an increasingly hostile cyberspace. The neighborhood is clearly getting worse by the minute.

And the media hasn't helped. By labeling everyone with access to a keyboard and an attitude a hacker, journalists have caused the term to develop incredibly pejorative connotations. "If he's a hacker, he must be bad." "Oh, God! It's a hacker — watch out." "Hackers are criminal by nature." Well, thank you very much, John Markoff et al., for rip-roaring headlines that have forever misinformed America.

First of all, hackers are not bad. Criminals are bad. Criminal hacking is bad. Hacking is not bad, and that is the recurring theme in Carolyn Meinel's thoroughly enjoyable, highly entertaining and educational new book, *The Happy Hacker: A Guide to (Mostly) Harmless Hacking.*

The Happy Hacker answers hundreds of questions network administrators have about hackers and hacking. Meinel provides dozens of step-by-step explanations on exactly how hacking is done — from telnet to port surfing to using a shell account.

In her folksy, conversational manner, Meinel starts off by teaching the reader how terribly insecure a Windows 95 box is and walks us through a series of super-simple ways to hack right into your corporate network. Considering that the vast majority of computer crimes and hacks occur from within a company's network, these introductory parts of *The Happy Hacker* are worth the price of the book alone.

Meinel details the weaknesses that Microsoft will never tell you about and wishes would just go away. In doing so, she provides compelling reasons to ignore Windows 95, forget about Windows 98 and rush right out and buy a copy of the infinitely more secure Windows NT.

Now before you rant and rave about hackers writing books, know that Meinel is a computer scientist, a mother of four and, as she puts it, "an old lady" who remembers her 40s. While she provides a whole slew of hacks that work, especially on those machines "with poor defenses," there are no technical revelations of scurrilous Clinton-level scandal. She focuses on the basics of hacking, and after reading this highly worthwhile book, I realized that every security and network administrator should have it on his shelf.

Far from encouraging teenage wannabes to hack away at your front door, the book is chock full of "you can get punched in the nose and fired" warnings as well as "you can go to jail" warnings. Many of the tricks and techniques described throughout *The Happy Hacker* are clearly illegal, immoral and unethical. The point that Meinel makes over and over is "hacking your own equipment is healthy and good. Hacking a box or network with permission is good. Any other kind of hacking will land you in jail."

The Happy Hacker has something for everyone. Divided into four sections, the 260-page tome is a moderately technical book, with advice for the newbie sprinkled throughout. It also offers "evil genius" tips for more advanced readers.

Meinel's goals are admirable, even though she has been railed at by the hacker community and several legitimate publishers refused to print her tome. She advocates the ethical use of technology, legal hacking in which the results are beneficial and conducted with permission — and she totally decries illegal activities of any kind. Her sections on spoofed e-mail will be a godsend to the network administrator trying to train staff in the details of how hackers work their so-called magic. The dangers of open ports and shell-based telnet are driven home, as is the clearly written section on how to map the Internet.

As denial-of-service attacks become more prevalent, Meinel provides the basics of why and how they work, plus the hard facts on what can and cannot be done about them. She gives coherent advice on how to protect yourself against spamming and e-mail bombs. Her participation in a number of hacker wars has given Meinel an insider's look at the psyche and the psychosis of the Undernet (underground Internet), lamerz, d00dz, wannabes, 3lit3 haxors and a host of the techno-denizens you probably don't want your daughter dating. (The vast majority of hackers are male.)

On the downside, the book could have used a good editor — it contains typos, some math errors and inconsistent formatting. However, my primary criticism is a compliment: In each chapter Meinel includes so many URLs for reference that I now have to spend a lot of time organizing them in order to check them out. I wish she had put them all into a properly annotated online bibliography.

So network administration folks, managers and bosses on high: If you've ever wanted to know exactly how systems are broken into, this is the book for you. Its easy-going style and value-packed contents put it in the top 10 of my essential security reading list.

Published by American Eagle Publications, *The Happy Hacker* (ISBN 0-929408-21-7) is available for $29.95 at the online bookstore at www.infowar.com.

Schwartau is chief operating officer of The Security Experts, Inc., an information security consulting firm in Seminole, Fla., and president of infowar.com. He can be reached at winn@securityexperts.com or winn@infowar.com.

financial officer of this corporation should be fired.

Second, placing Steve Hindman's picture in the middle of the page with a quote he used to announce AT&T's new service-level agreement program is a cheap shot. He is no more responsible for the outage than you are. If you wanted to be sensational, why don't you drag the equipment manufacturer into the mix as well?

What most customers need to do is establish, fund and practice a workable disaster recovery plan that will lessen the financial and resource burden that incidents like this create. To do less is irresponsible in some cases and criminal in others.

Tom Brophy
President
NetPlus, Inc.
Totowa, N.J.

I would like to offer the following comments in relation to "AT&T offers facts about frame fiasco" (April 27, page 1):

First, software upgrades can be applied online under certain conditions and procedures. Frame relay networks are operational 24-7.

Second, it's impossible to test all upgrades in the lab. The lab cannot accommodate and simulate a 145-node network such as AT&T's frame network. Normally any upgrade impact is much different on a small lab-based setup with three or four nodes.

Third, it is possible that the DS-3 links (where the upgrade was applied) were going up and down, causing link state error messages to float through the entire network. Message loops can occur in large networks.

In addition, the article "Why AT&T's disaster recovery service failed" (April 27, page 33) covers all the options AT&T offers today. However, I would like to add that activation charges for recovery services can be avoided under contract terms, and customers must ask for ISDN bypass — remote to central site ISDN that bypasses the frame relay service. Furthermore, users can always use a second frame relay carrier for critical locations.

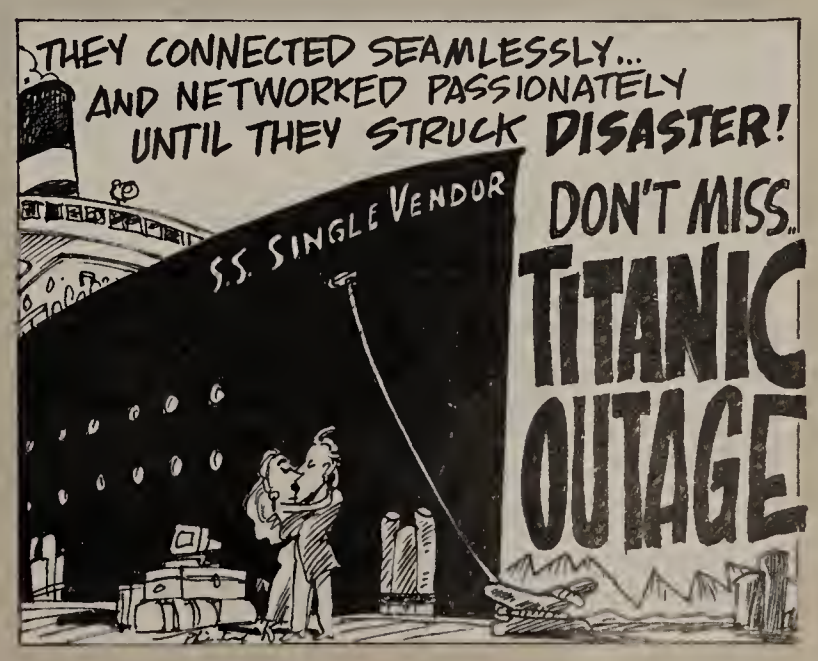
Peter Alissandratos
Telecommunications consultant
Beekman, N.Y.

There's more good news for users arising from AT&T's network outage, in addition to those points Christine Heckart and Daniel Briere identified in their column (April 27, page 36). In AT&T's press release of April 22, the carrier said it will share its analysis of the network outage with the Federal Communications Commission, industrywide Network Reliability Council and other network providers. This is a first and marks a key milestone in the maturing of frame relay services.

It's time for ISPs to step up to the bar and share their analyses of outages in order to prevent future outages, no matter which carrier provides the service. That would be great news for users.

Tony Rybczynski
Director, Strategic Technologies and Marketing
Nortel Enterprise Data Networks
Ottawa

Teletoons



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HEAD TO HEAD

Are VPNs ready for prime time?

MARIE-LOUISE DERUAZ

Yes, for remote access . . .

By Tom Pincince, Bay Networks

For almost a year, major network vendors and a slew of start-ups have touted the benefits of virtual private networks (VPN). Essentially, VPN technology allows you to build extranets, which enable you to use the Internet for private communication, commerce and collaboration.

Let's be honest — VPNs will not replace corporate WANs in the near future. But there are applications for which VPNs make sense today.

Initially, remote access is the most appropriate enterprise application for VPNs. Corporations can save $1 million per year per 1,000 users by implementing an extranet. Because users always dial in to a local ISP, access charges, such as long-distance and toll-free phone charges, are eliminated. In addition, having fewer devices on the network significantly reduces management and capital costs.

Major corporations such as American Airlines/Sabre Labs and 3M Corp. have built extranets. In doing so, they have not only reduced costs by at least $1,000 per user per year over their old remote access systems, but have also quickly and easily provided mobile employees, business partners and customers with access to their corporate resources. With the right extranet access products, modem hassles can be outsourced to a service provider, freeing time for you to concentrate on business issues.

Furthermore, VPNs and extranets are more scalable than traditional remote access solutions. Currently, every time you want to add more remote users, you have to buy more modems and add T-1 lines. This is expensive, time consuming and a management nuisance.

Plus, with an extranet, new users, including business partners, can be added easily, without expensive and complex equipment upgrades.

Yet, corporations will not abandon their existing network infrastructures entirely and shift remote access, collaboration and electronic commerce applications to the Internet all at once. It'll take time, but each application that moves to the Internet will increase your savings.

Supply chain management, for example, will become more efficient as extranet links between suppliers and buyers improve the process. Direct links between retailers and suppliers ensure more precise inventory control. By creating open procedures between business partners, extranets extend electronic commerce beyond online transactions.

It is important to note the Internet that will support these mission-critical applications is not the wild and woolly Internet, but rather the business-class Internet. Top-tier service providers such as AT&T, Concentric, MCI, Sprint and UUNet will offer the quality of service and service-level agreements corporations will demand to shift business applications to the Internet.

Extranets and VPNs are a viable alternative to traditional remote access. All corporations may not be ready to move their entire supply chain to the Internet backbone immediately — but the technology exists today, and further innovations will continue to be available for secure, scalable and manageable extranet access.

Pincince is vice president, business development, at Bay Networks, Inc. in Billerica, Mass. He can be reached at (978) 916-0731 or at tom_pincince@baynetworks.com.

. . . Not for your backbone

By Tony Rybczynski, Nortel

Today, most of the attention in the virtual private network market is focused on Internet-based VPNs. Don't be fooled. Such VPNs are over-hyped and are definitely not ready to be your IP backbone for mission-critical applications requiring high reliability, consistent low latency and minimum bandwidth guarantees between sites. The good news is there are other VPN architectures to choose from, so let's look at these and make an educated decision.

The first class of Internet-based VPNs overlays the Internet via IP tunneling. This approach is very attractive from economic and connectivity standpoints. However, Internet-based VPNs have little real value as enterprise IP backbones because of the 'Net's unpredictability and vulnerability to intruders. The same considerations apply to roll-your-own VPNs, whereby the user owns and manages the tunneling router or security platform.

A second class of overlay VPN involves IP tunneling over an ISP's network. These VPNs generally don't support any form of class of service (CoS), they can't offer bandwidth guarantees and are also vulnerable to access bandwidth intruders.

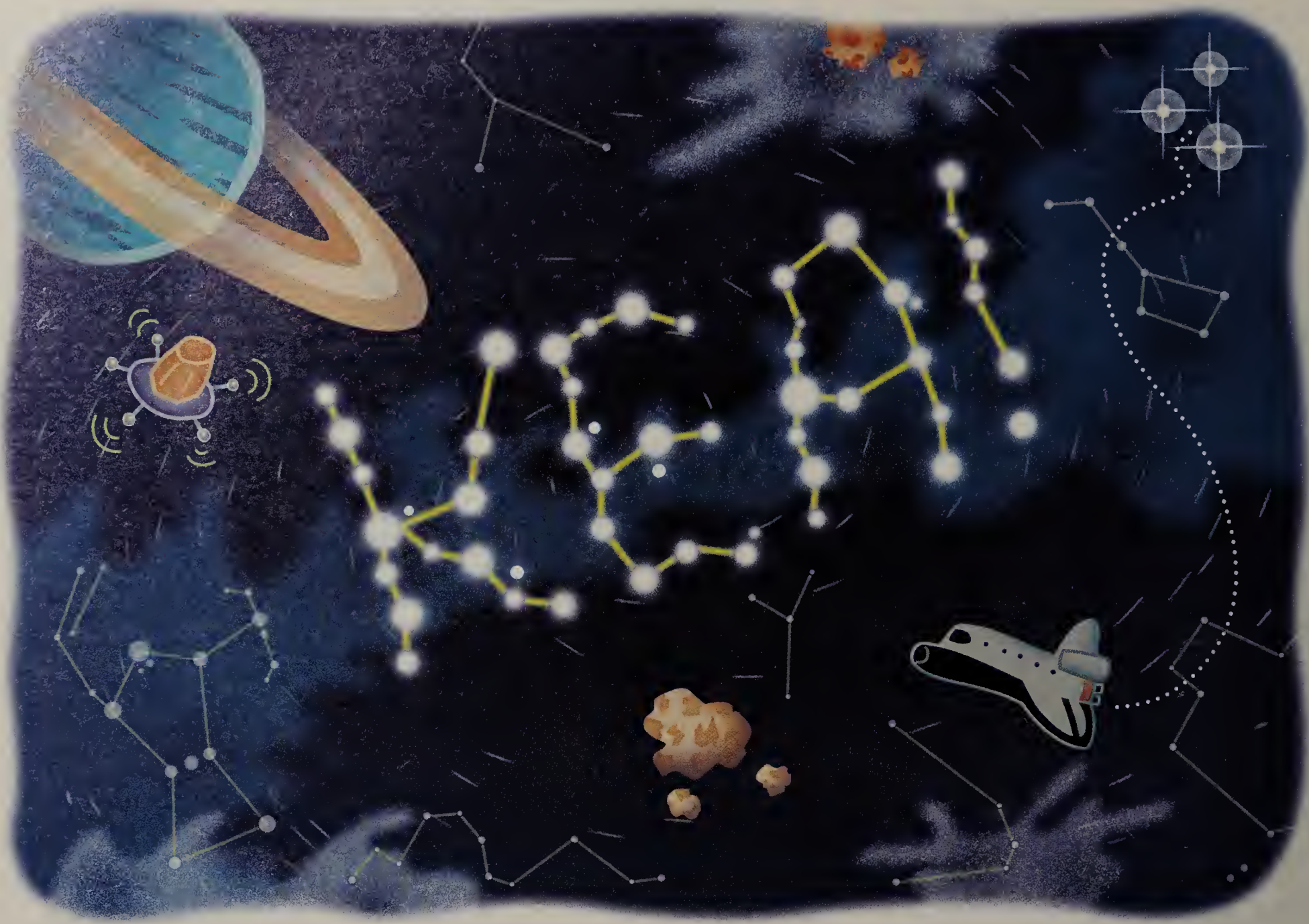
A third VPN architecture involves a different form of tunneling: virtual circuit tunneling, this time over Layer 2 frame relay or ATM permanent virtual circuits. This approach addresses enterprise requirements for availability, latency, CoS and security but suffers from two major problems: limited network knowledge and scalability. IP and virtual circuit tunneling severely limit the service provider's ability to monitor, troubleshoot and generate reports on a per-customer basis because what flows in the tunnels is only visible at the end points. Scalability is limited by the number of routing adjacencies as the number of sites grows, and also by the need to manage a potentially large number of tunnels or connections, one per each pair of sites.

A fourth architecture, Layer 3 VPNs, uses a routing hierarchy to aggregate routes and give each VPN visibility in the network. This can be done by deploying multiple routers, one per VPN, in the central office (CO), but this results in operational complexity and higher costs.

A better solution is to create new CO routing switch architectures that allow traffic from multiple VPNs to be routed and switched across the network, while isolating the VPNs from one another. Such an architecture provides a high degree of scalability and meets enterprise user requirements for security, service-level agreement (SLA) guarantees and reliability.

So what's a user to do? Overlay Internet-based VPNs are only an option if low cost is your objective and best-effort service is adequate. If you have fewer than 10 sites, consider overlay VPNs from service providers that specialize in VPN service or Layer 2 VPNs. If you have more than 10 sites, Layer 3 VPNs with their scalable security and SLA guarantees are for you.

Rybczynski is director of strategic marketing and technologies in Nortel's Enterprise Data Networks Group in Ottawa, Canada. He can be reached at (613) 723-4920 or Tony.Rybczynski@nortel.com.



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FEATURE

SWITCH FUNCTIONALITY AND PERFORMANCE SOAR; VENDORS READY TO FULFILL HIGH-SPEED PROMISES.

Good news for token ring

By Charles Bruno

The Tolly Group over the past year has evaluated 16M bit/sec token-ring switches from seven vendors and has come to a firm conclusion: Token-ring users can rest easy.

IBM's 8270 Nways Token Ring *LAN Switch Model 800 supports virtual LANs, Layer 3 switching and advanced filtering techniques. It pulls double duty as a backbone and workgroup switch.*

Second-generation products are delivering switching to the desktop and offering a clear upgrade path to 100M bit/sec token ring and beyond for purists who don't relish wholesale migrations to ATM or Ethernet.

With The Tolly Group Token Ring Industry Study now in its second year, we've gathered enough information to assess the market. The intent here is not to say which switch is faster or to reveal who beat whom in head-to-head competition — you can go to The Tolly Group Web site for that. Rather, we're out to provide an evaluation of where the product category stands to help token-ring users make some important decisions about strategic direction.

In terms of performance, the news is good. Across the board, token-ring switches have matured into high-performance offerings that for-

TOKEN-RING SWITCH FEATURE COMPARISON

	Filtering types supported				VLAN membership by				RMON
	Broadcast	IP/IPX	Layer 3 IP address	MAC address	Physical port	MAC address	Protocol	Multiple switches	Groups supported
Bay Networks, Inc. 5525HD TR Switch Host	•	•	•	•	•		Q3 '98	•	Statistics, history
Bay Networks, Inc. Centillion 100	•	•	•	•	•			•	Not tested
Cabletron Systems, Inc. SmartSwitch 9000	•			•	Not tested	Not tested	Not tested	Not tested	Statistics, history, alarms
Cisco Systems, Inc. Catalyst 3900	•	•		•	•	•		•	Statistics, history, alarms
Cisco Systems, Inc. Catalyst 5000		•		•	•	•		•	Statistics, history, alarms
IBM 8270 Nways Token Ring LAN Switch Model 800	•	•	•	•	•	•	•	•	Statistics, history, alarms
Madge Networks, Inc. Smart Ringswitch	•			•	•			•	Supports all 10 RMON groups
Olicom, Inc. OC-8600 CrossFire Token-Ring Switch	•	•		•	•			•	Statistics, history, alarms
3Com Corp. SuperStack II Switch 2000 TR					•			•	Statistics, history

Note: A complete listing of feature sets and performance test results can be viewed on the World Wide Web at www.tolly.com.

SOURCE: THE TOLLY GROUP, MANASQUAN, N.J.

About the Token Ring Industry Study

As this story outlines, token-ring switching has undergone a metamorphosis with the throughput of most switches nearly tripling at the same time vendors have packaged an abundant array of value-added services.

In an effort to demonstrate product differences and provide network managers with the comprehensive data required to make purchasing decisions, The Tolly Group has applied its Industry Study model to token-ring switches.

We evaluated key aspects of token-ring switches including throughput, filtering support and traffic management capabilities such as buffering and other advanced features. We also looked at signaling and ATM routing, support for legacy LAN services such as LAN Emulation and Classical IP and several management features including Remote Monitoring support.

To conduct single-stream performance tests, we used nearly a dozen Wandel & Goltermann, Inc. DA-320 DominoLAN analyzers, specifically to take advantage of their frame-generation and traffic monitoring capabilities. For the 28K bit/sec token-ring frame tests, the DA-320 was the only tool capable of stressing the devices being tested. The DA-320s each connected to a token-ring multistation access unit, which connected to the token-ring switch operating at 16M bit/sec in half-duplex mode. The DA-320s also generated various traffic loads for uplink testing. For tests with high-density port traffic, The Tolly Group also employed Netcom Systems, Inc.'s SmartBits traffic generators.

Invitations to participate in the testing were sent to all ATM switch vendors. The participating vendors funded this project, although The Tolly Group conceived and executed all tests independent of the vendors. Complete test results are available worldwide at no cost and will be updated during 1998 as additional products are evaluated.

For a more detailed view of test results, visit The Tolly Group Web site, accessible via Network World Fusion.Visitors can actively search the Token Ring Industry Study for specific vendor results or by test.

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ward frames at almost three times the rate of Ethernet switches. Token-ring switches often approach maximum wire speed even with small packets, which are toughest to forward.

Token-ring switches also now offer plenty of value-added features and functions that you'll need to consider, including support for Remote Monitoring (RMON) and fancy filtering techniques that conserve bandwidth and improve network performance.

Cisco's Catalyst 5000 *delivered 98.8M bit/sec of throughput in performance tests with eight streams of traffic shipped across Cisco's proprietary 100M bit/sec InterSwitch Link.*

Token-ring purists should note that while all seven participating vendors have notched up the performance of their token-ring switches, only IBM, Madge Networks, Inc. and Olicom, Inc. have pledged unequivocally to support the emerging IEEE 802.5 High-Speed Token Ring

Cisco's Catalyst 3900 *is the offspring of a joint development deal with Olicom (both share the same MAC chip). It should closely rival Olicom's OC-8600 in performance.*

(HSTR) standard for running token-ring switches at 100M bit/sec and ultimately 1G bit/sec.

Vendors including Cabletron Systems, Inc., Cisco Systems, Inc. and 3Com Corp., meanwhile, have prepared for a future without industry-standard token ring. They've invested significantly in what are, in effect, exit strategies aimed at convincing users of the merits of ATM, Gigabit Ethernet or proprietary offerings such as Cisco's InterSwitch Link. Each company intends to wait to see if market demand develops around HSTR before floating a product (see story, page 48).

Single-stream performance

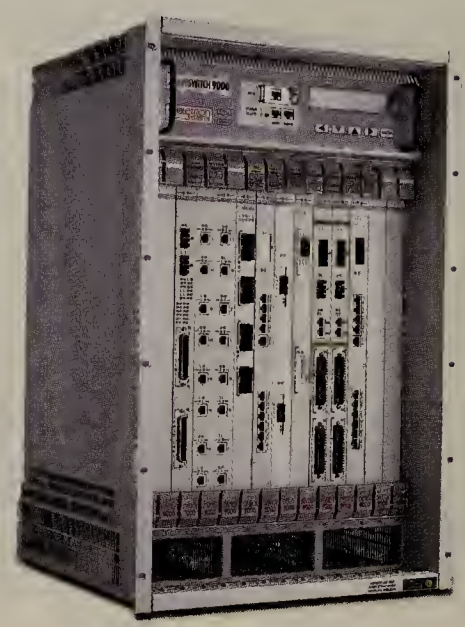
In terms of raw performance, any of the switches tested should meet the demands of a token-ring infrastructure.

What should impress users most about a token-ring switch's frame-handling capability is how quickly the device can forward small (28- and 64-byte) frames, those prevalent in interactive traffic such as e-mail and database transactions.

Most networks rarely, if ever, will see a surge of small frame traffic beyond 5,000 frame/sec. Yet in pure token ring-to-token ring testing using a stream of 28-byte frames, eight of the nine switches tested delivered an average of 46,000 frame/sec. That's almost 75% of the maximum theoretical throughput and 2 1/2 times faster than products available just 18 months ago, when switches pumped out anywhere from 8,000 to 18,000 frame/sec.

Even the worst of the bunch reported throughput ranging from 37,000+ to 47,000 frame/sec for 28-byte frame tests, far exceeding the 5,000 frame/sec peak you're ever likely to need.

With large frames of 512 bytes and up (common to file transfer and WAN traffic streams), wire-speed throughput was the order of the day for all switches tested. In single-stream tests of 3,972-byte frames, all nine switches tested were able to ship data at 15.85M out of a possible 16M bit/sec, which amounts to better than 99% bandwidth utilization. The test demonstrates that the switches tested can handle any large frame that comes their way without hitting a performance barrier.



Cabletron's SmartSwitch 9000 *has on-board ASICs that handle frame forwarding and the translation of token-ring frames to an internal proprietary format, so performance remains stable as management and other value-added features are employed.*

Multistream tests

While single-stream tests explore the pure throughput a token-ring switch can deliver, multistream tests probe how efficiently the switches use ATM, FDDI, Fast Ethernet and Gigabit Ethernet backbones as switch-to-switch links.

Essentially, the multistream results echo the single-stream test findings: Across the board, token-ring switch throughput is just a shade below wire speed. In configurations ranging from two 16M bit/sec streams of 3,972-byte frames to eight streams over an ATM link, throughput never dipped below 99% of the maximum possible.

Bay's 5525HD TR Switch Host *can support up to 240 ports in a combined ATM/token-ring environment.*

For example, when handling 3,972-byte frames delivered over two 16M bit/sec data streams, six of the nine switches clocked in with throughput of 31.9M and the remaining switches delivered 31.7M out of a maximum of 32M bit/sec. With the same size packets in an eight-stream test over an ATM link, where the maximum throughput was 128M bit/sec, seven of nine switches tested delivered throughput of 127M bit/sec or more.

Ultimately, the multistream tests prove that the switches tested don't hit any performance walls or suffer from architectural limitations that affect their scalability.

RMONed and ready

Beyond throughput tests, we examined vendor support for the RMON standard. Every vendor in the study supports basic RMON groups such as history, statistics and alarms. But only Madge offers support for all 10 RMON groups.

"It's the difficult groups that provide the most functionality and power to users trying to troubleshoot their nets," says Simon Jones, product marketing manager for token-ring switches at Madge. RMON groups such as hosts, hostTOPn, filters and capture are still largely unsupported on token-ring switches.

One reason token-ring switch vendors provide limited support for RMON is they would have to add memory and possibly on-board Application Specific Integrated Circuits (ASIC) in order to maintain the same level of performance. Tracing a LAN at wire speed, for instance, requires the switch to dedicate memory to store captured frames or use large buffers to cache the data until a probe calls for it. The additional memory and ASICs would jack up prices at a time when token-ring vendors are trying to compete against already less-expensive Ethernet switches.

Moreover, many token-ring switches lack the multitasking operating systems needed to handle RMON processing alongside switching. "Our aim is to let the switch focus on switching and do the RMON analysis somewhere else," says Ed Harper, product line manager of 3Com's Token Ring Business Group.

It's interesting that RMON has essentially replaced IBM's LAN Network Manager as the preeminent management tool for token-ring nets. Aside from IBM, only Bay Networks, Inc. supports LAN Network Manager.

Filtering fuss

RMON support may help users monitor what data rides over the network, but filtering features can help prevent unwanted data from traversing the network in the first place, conserving bandwidth and improving overall network performance in the process.

Evaluating token-ring switch support for filtering can be a tedious task. You'll be faced with a mountain of filtering options, but the main ones you need to consider are broadcast type (including single- and all-route broadcasts), Layer 3 IP address filtering and media access control address filtering.

All the top vendors will likely support these features; the trick is deciphering the level of customization offered and the resulting payback. Pay attention to factors such as how many filters the switch supports per port, and examine the type of bit patterns the filters can recognize. The Bay 5525HD, for example, supports up to

Continued on page 50

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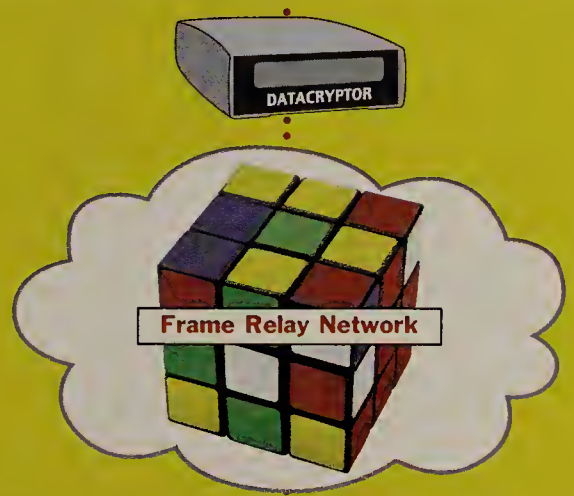

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High-Speed Token Ring: Vendor directions

When it comes to High-Speed Token Ring (HSTR), switch vendors are falling into one of two camps. One group is steadfastly behind HSTR and plans to offer a clear-cut upgrade path. Members of the other camp are taking a wait-and-see attitude, in the interim coaxing users to migrate their existing token-ring networks to other high-speed alternatives.

Standing behind HSTR

Although he's an unabashed backer of High-Speed Token Ring, **Olicom's Jorgen Hog** *says ATM has its benefits, too, including the ability to detect network failures and route traffic around them.*

IBM, Olicom, Inc. and Madge Networks, Inc. make no bones about it: They're unwavering in their support for High-Speed Token Ring (HSTR) products based on the emerging IEEE 802.5 standard. All three vendors — along with, to a lesser extent, Bay Networks, Inc. — are positioning HSTR as a frame-based high-speed backbone alternative. At the same time, the vendors are offering high-speed backbone products based on ATM as their cell-based backbone option.

Token-ring users need HSTR because it provides support for large frame sizes, prioritization and source routing services, says Jeff King, Madge's product line manager for switching products. ATM, meanwhile, offers benefits over standard frame-based options, including its quality-of-service and class-of-service features, says Greg Wong, IBM's product line manager for token-ring switches.

ATM is also better suited to blending voice and data than token ring. Jorgen Hog, vice president of Network Products Marketing at Olicom, also points to the reliability of ATM. Olicom's ClearSession software, for example, enhances fault tolerance in the ATM core by detecting network failures and redirecting traffic in 3 seconds or less.

HSTR can likewise serve as a backbone technology, with the caveat that it is not as scalable as ATM, Wong says.

"We think HSTR, since it is standards-based, will have the best shot at minimizing migration concerns for token-ring users," he says. IBM will deliver an HSTR blade for its 8270 Nways LAN Switch Model 800, as well as HSTR server cards, Wong says.

However, he offers no definitive timetable for delivery. At a recent token-ring town meeting co-sponsored by *Network World* and The Tolly Group, an IBM spokesman said a triple-speed 4/16/100M bit/sec network interface card will arrive in September and switch upgrades will be generally available by year-end.

Madge will roll out a four-port HSTR module in September for its Ringswitch Plus and Ringswitch Express products, King says. Madge's Active Broadcast Control, it's hallmark broadcast management facility, will be supported on HSTR modules running in the Ringswitch line, he adds.

Olicom plans to offer HSTR support for its OC-8600 CrossFire Token-Ring Switch and HSTR server adapters in July or August, Hog says. Each OC-8600 will be able to support four HSTR ports along with 20 4/16M bit/sec ports. Customers could stack up to eight switches, making for 32 HSTR ports, he says.

Bay's strategy largely revolves around support for ATM, but the vendor is developing an HSTR proof-of-concept board and can churn out a product if customer demand materializes, according to Jeff Clowers, Bay's product line manager for token ring. Any packet that touches Bay's 5525HD TR Switch Host's backplane gets converted internally to an ATM cell.

"We can merge token ring, Ethernet and ATM in the same box," he says. As for HSTR, "we won't discount it as a backbone technology, but we'd rather see it as a server link," Clowers says.

Token-ring users exit here

Cabletron's Finn Nielsen *says his company is pushing translational switching: "We give token-ring stations access to higher speed technologies whether Fast Ethernet, Gigabit Ethernet, FDDI or ATM."*

Despite pledging support for HSTR a year ago, Cabletron Systems, Inc., Cisco Systems, Inc. and 3Com Corp. are now taking a wait-and-see attitude. At the same time, they are aggressively pushing alternative, and sometimes proprietary, solutions. It seems unlikely that these companies will ever support HSTR unless customers threaten to take their business elsewhere. "Our customer base doesn't have time to wait for such a standard to come to fruition," says Finn Nielsen, Cabletron's product marketing manager.

Their implementations may differ, but each of the vendors is touting a switch that can meld Ethernet and token ring into a single switch fabric. Cabletron's big push is translational switching, what the vendor likes to call "any-to-any switching." Basically, the SmartSwitch 9000 converts any incoming packet to an internal common frame format. It is converted back to the appropriate format as it hits an egress port. "This is a full translation, so I can have a token-ring client today talk to an Ethernet server," Nielsen says. "We give token-ring stations access to higher speed technologies, whether Fast Ethernet, Gigabit Ethernet, FDDI or ATM."

Cisco is taking a more proprietary approach. The company has served up the InterSwitch Link, which offers 100M bit/sec performance and allows token ring to tunnel through Fast Ethernet. Cisco also supports ATM as a backbone choice. "In no way are we refuting or moving away from HSTR," says Randall Campbell, product line manager for token-ring switching at Cisco. Cisco, however, objects to the High-Speed Token Ring Alliance's use of token-ring media access control (MAC) technology instead of the Ethernet version, arguing it amounts to reinventing the wheel. Network interface cards and Application Specific Integrated Circuits supporting the Ethernet MAC format already exist; coming up with new versions for token ring will drive up development costs and, ultimately, prices.

And Cisco contends HSTR lacks adequate support for Ethernet, a point hotly contested by Jeff King, product line manager for switching products at Madge. One of the provisions of the HSTR standard is the 802.1q tagging standard that permits HSTR to carve out tunnels for pockets of Ethernet, King says.

"If you try to do that the other way around [carry token ring in Ethernet], you have this fundamental crunch with 1,518-byte Ethernet packets trying to support the longer token-ring frames," King says.

3Com isn't going the proprietary route like Cisco, but instead is rallying around its traditional Ethernet strengths. 3Com offers three avenues for users to adopt high-speed backbone alternatives to token ring: ATM (via token-ring LAN Emulation), FDDI and token-ring tunneling within Fast Ethernet. "Our main strategy is to help large customers make a smooth migration as they add Fast Ethernet and help them move in that direction," says Ed Harper, product line manager of 3Com's Token-Ring Business Group.

3Com will support IEEE 802.5 HSTR only if customer demand warrants it, Harper says.

— Charles Bruno

1998 Seminar Dates and Locations:

April 13	Chicago, IL
April 14	Philadelphia, PA
April 29	Boston, MA
April 30	New York, NY
May 20	Los Angeles, CA
May 21	San Francisco, CA
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In such enterprises, over 70% of the vital corporate data resides within the traditional data center as opposed to on the web servers hosting their nascent intranets. The data center systems, though increasingly supporting and integrating TCP/IP, will be running mission-critical SNA applications well past the year 2000. Enterprises that currently have data centers have no choice but to somehow integrate their new intranets and Internet interfaces with the SNA-centric systems, applications, files and databases that reside within the data center.

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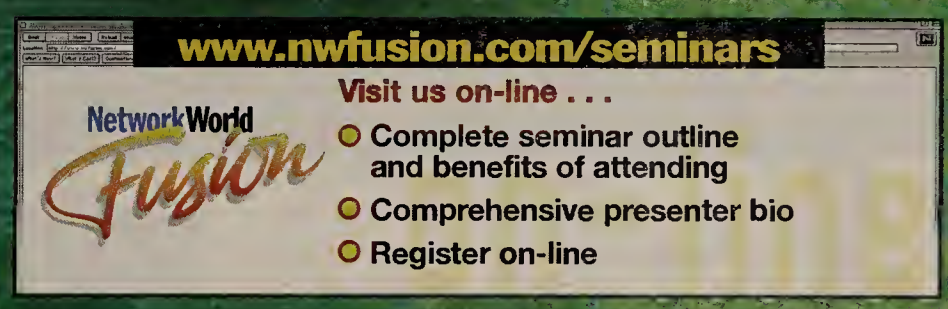

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90 different filters per port and can filter broadcast, NetBIOS and unknown unicast traffic, among other types.

Check, too, the level of integration between filters and RMON management. Some switches, such as Cabletron's SmartSwitch 9000, enable you to set high and low thresholds via an RMON application.

As for broadcast filtering, the IEEE 802.5 standards committee has not yet tackled broadcast management, so the implementations by definition are proprietary. But because broadcast management is done switch by switch, there are no interoperability issues to worry about when combining switches from different vendors onto the same campus LAN.

Here, Madge's Smart Ringswitch seems to have the most developed broadcast throttling mechanism with its Active Broadcast Control (ABC).

ABC provides a battery of eight broadcast management grooming facilities, including advanced filtering and caching techniques. The software, which resides on any of Madge's Smart Ringswitches, reduces the amount of broadcast traffic sent to rings.

Olicom this summer *will come out with a two-port High-Speed Token Ring expansion module for its OC-8600 CrossFire Token-Ring Switch. Each switch will support two of the modules, and users can stack up to eight switches for a total of 32 HSTR ports.*

Additionally ABC intelligently converts All-Routes Explorer (ARE) frames to Spanning Tree Explorer frames, which produce a fraction of the broadcast frames ARE churns out.

ABC also filters Novell, Inc.'s IPX Routing Information Protocol (RIP) and Server Advertisement Protocol (SAP) frames. Smart Ringswitch software learns which rings contain devices that need to receive RIP and SAP frames and forwards data as needed. Madge has even inserted facilities in ABC to control NetBIOS traffic.

Token ring endures

The Tolly Group's examination of leading token-ring switches reveals that vendors have gone a long way toward extending the life of token-ring LANs by improving switch performance and outfitting their products with advanced filtering and monitoring techniques.

Clearly, token-ring purists who wish to maintain their token-ring environment now have a migration path to a high-speed 100M bit/sec backbone option with the evolution of HSTR.

What's less clear, though, is whether some of the industry's more formidable vendors, including Cisco, Cabletron and 3Com, will eventually come around and support the IEEE 802.5 HSTR standard.

By all appearances, HSTR will survive because of the diligence of vendors such as IBM, Madge, Olicom and possibly Bay. But if users want HSTR to endure — along with the benefits of large frame sizes, data prioritization and source routing — they must send a clear message to suppliers that HSTR is their preferred option.

HSTR detractors claim products won't emerge for at least a year, but vendors, including IBM, demonstrated prototypes earlier this month at NetWorld + Interop 98. Other vendors are planning initial shipments as early as this summer.

At this point in the ongoing Token Ring Industry Study, our conclusion is that HSTR is alive and well.

Data analysis for the Token Ring Industry Study was provided by Kevin Tolly, president and CEO of The Tolly Group in Manasquan, N.J. Testing for this project was conducted by Thomas Callas and Steven Nawolski, both engineers with The Tolly Group.

Bruno is managing editor of publishing products at The Tolly Group. He can be reached at cbruno@tolly.com.

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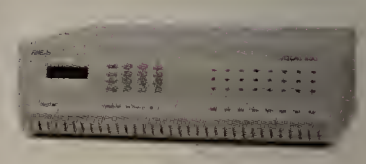

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REVIEW

Heavy-duty Web site management

Continued from page 1

The software is organized around three functions: publishing, delivering and analyzing. Publishing involves support for a formal submission, approval and deployment cycle for Web pages. The delivery side offers searching tools, personalization capabilities, push services and knowledge management. The analysis functions include log analysis (including those from other vendors' Web servers), report writing and content analysis.

Configuration and management appear slightly better than in Site Server 2.0, and some operations, such as analysis, are definitely faster in 3.0. Reporting and management features are more polished and comprehensive. And you can now perform most management operations using your choice of the Web interface, the Microsoft Management Console (MMC) or command-line utilities.

Perhaps the biggest change in Site Server 3.0 is the Knowledge Management system. At its heart is the search engine, which gathers information into catalogs. Catalogs are topical collections of content from Web pages, file directories, Exchange folders and Open Database Connectivity databases.

You can run the catalog-building process on another server to distribute the load if you wish. Once you've defined a catalog, you can schedule it to be automatically updated periodically.

Catalog access to individual pages is controlled by the same security NT applies to the original source data. This is much more important than it may at first sound. It ensures that when users conduct a search, they can't even see matching index entries for content for which they have no access rights.

Push is the next component of Knowledge Manager. Site Server 3.0 includes Active Channel Server to define channels that are delivered in Microsoft's Active Channel Definition Format. Site Server also offers Active Channel Multicaster, which can deliver channels using multicast technology to conserve bandwidth.

Another new feature in Site Server 3.0 is automatic language detection — the ability of the server to determine which language is used without clues or help from anyone in the publishing process. This allows users to search for content in or to restrict their searches to a specific language — a powerful feature for multinational organizations.

The Knowledge Manager interface supports searching of catalogs and a Yahoo-like hierarchical index. The site administrator defines this index to reflect the interests of the organization — what Microsoft calls the Site Vocabulary.

Clicking on a term in the Site Vocabulary runs a search of one or more catalogs using that term. Knowledge Manager can also be used to create briefs, which are sets of saved searches or lists of URLs that can be sent via e-mail or push channels.

You can also create customized interfaces for individual users with the Personalization and Membership services. This subsystem supports an e-mail service you can use to send personalized content linked to individuals' interests. The service also supports member-only content and site personalization, enabling users to tailor site presentation to their tastes.

Finally, Microsoft has improved the site analysis tools in Site Server 3.0. The Report Writer is highly configurable and can report on Microsoft Site Server activity as well as import and analyze logs from other servers.

Content visualization is also supported, with a much improved graphical interface that displays links between documents. Documents are color-coded according to level of usage, and the most heavily used paths through the site are denoted by magenta lines, helping you get a feel for site usage far faster than with any text-based reporting system.

You can also display usage data as animation over time, which gives you valuable insight into site activity, showing trends that would be impossible to spot by just reading textual reports.

As fine as its reporting tools are, Microsoft doesn't stint when it comes providing tools to publish information. Microsoft divides this processes into five steps: creation, submission, tagging (adding meta tags to describe content for management purposes), approval and deployment. Site Server includes FrontPage and Visual InterDev for the creation step, while the rest of the process is managed through Web forms. Site Server 3.0 doesn't include ver-

Continued on page 56

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Score Card

	Administration (40%)	Reporting (30%)	Stability (20%)	Installation and configuration (5%)	Documentation (5%)	Total
Site Server	9 x .40 = 3.60	9 x .30 = 2.70	9 x .20 = 1.8	8 x 0.05 = 0.40	9 x 0.05 = 0.45	8.95

Individual category scores are based on a scale of 1 to10. **Percentages** are the weight given each category in determining the **total score.**

Commerce Edition available

We reviewed Microsoft Corp.'s Site Server 2.0 last November in a round-up of commerce servers (*Intranet Magazine*, Nov. 17, 1997, page 18). It was the overall winner then, and its successor, Site Server 3.0, builds impressively on that winning foundation. In this release, Microsoft split Site Server into an intranet version, Site Server 3.0, and a version for building commercial Web services, called Site Server 3.0 Commerce Edition. The Commerce Edition requires an Open Database Connectivity-compliant, ANSI-standard SQL database. Not surprisingly, Microsoft recommends Microsoft SQL Server 6.5 with SQL Server Service Pack 3. Site Server 3.0 Commerce Edition has all the features of the basic version and adds an Ad Server and, marketing and promotion features as well as business-to-business and business-to-consumer order processing services. It's integrated with Microsoft Transaction Server and the Microsoft Wallet payment system. In addition, the installation package includes components from third-party vendors that you can use to support aspects of electronic commerce such as tax calculation and billing. The two versions share a common foundation of support services with enhanced analysis and management features and improved user interfaces.

Continued from page 53

sioning services, but that feature is planned for a future release.

The publishing process also includes support for production servers and staging servers, which allow content to be deployed in a restricted access environment for testing.

The deployment process has been improved and expanded since Version 2.0. It is now called Site Server 3.0 Content Deployment and supports publishing to Unix servers as well as Microsoft's Internet Information Server. Site Server lets you define user roles to control the publishing process:

- Content authors create documents
- Site editors are in charge of proofing content — for example, ensuring that spelling is correct and that formatting standards are adhered to.
- Site administrators have the ultimate authority in the publishing process. They can create and modify the Web structure as well as authorize and effect content deployment.

These roles are defined by membership of NT domain groups. Users can have more than one role for different sites and content. You assign users to roles via MMC, User Manager for Domains or the Web-based management interface.

After deployment, Site Server can generate detailed reports of all publishing operations and send them to you automatically via e-mail.

All of this power comes with a price, in the form of serious hardware requirements. Microsoft's minimum requirements, as usual, are too low for satisfactory performance. We recommend at least a 266-MHz Pentium Pro or Pentium II processor with 128M bytes of RAM and at least 5G bytes of disk space.

For software, you need Windows NT 4.0 with Service Pack 3 or higher and the NT Server 4.0 Option Pack, which itself requires Internet Explorer 4.01.

Give yourself plenty of time for installation — you'll be rebooting the server with monotonous regularity.

You need to read the documentation carefully to set up all of the components correctly. We recommend using the demonstration configuration the first time around and modifying it to create your final site.

Overall, the installation process is straightforward, if a little tedious. Microsoft could make it easier by figuring out how to get around the need to keep rebooting.

Every feature of Site Server 3.0 we examined is well-designed, well-implemented and delivers good performance. While its disk space and memory demands might seem voracious, the scale of Site Server's features more than justifies it.

Site Server 3.0 is a remarkable product. Its scope and feature set is so broad that it will cover a wide range of your information distribution and management needs. But with that breadth comes overhead. Be prepared to invest considerable time and effort in planning, designing and engineering if you expect to get the best out of it.

The alliance is a cooperative of users, consultants, educators and integrators that applies its technical and business skills to analyze and compare strategic network products.

Gibbs, a member of the Network World Test Alliance, is also a Network World *contributing editor, editorial advisor to* Intranet Magazine *and a marketing and technology consultant. He can be reached at mgibbs@ gibbs.com.*

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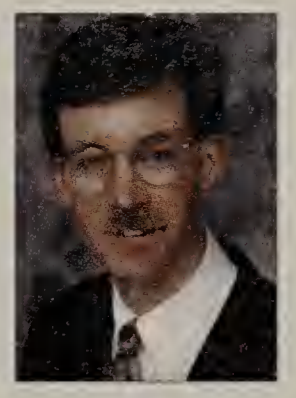

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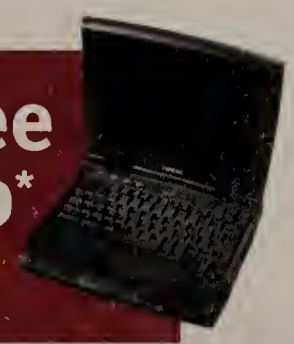

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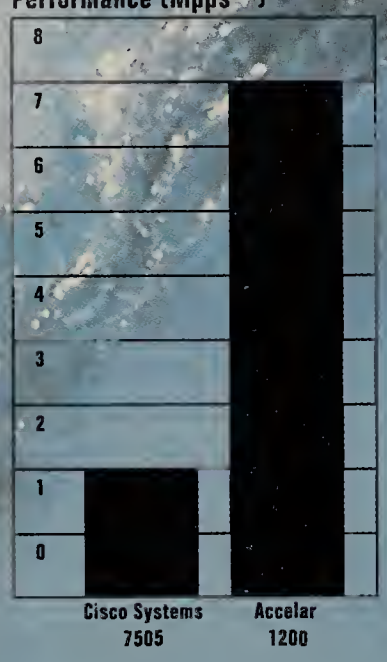

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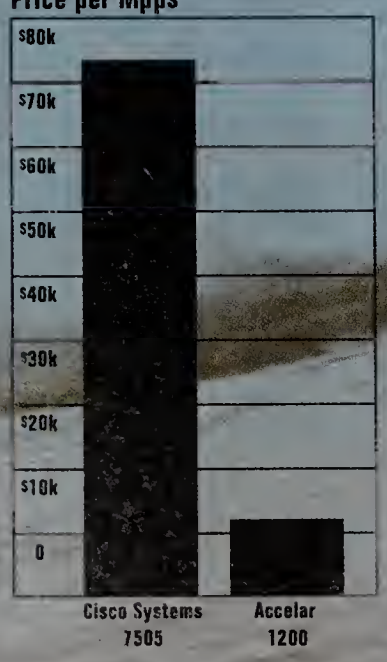

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Management Strategies

From bad to worse

A true story about a bad employee/manager relationship and expert advice on what to do about it.

By Lauren Gibbons Paul

Here's a story to strike fear into the hearts of network managers everywhere. It's a cautionary tale of a situation that started off lousy and got nothing but worse. It's a warning to keep a tight grip on your professionalism — and your sanity — despite the daily curves your job throws at you.

The plot begins in 1996, when our guy — we'll call him Bob — was a systems manager in charge of a VAX/VMS cluster for a small U.S. government laboratory that had two IT groups. Bob worked in the more technical group that ran the servers and the 800-node network. The second, less technical group was made up mainly of programmers and PC support engineers.

Late in 1996, the lab's funding was slashed, and each IT group had to lay off 10% of its staff. Before long, demoralization set in, and pretty soon, through attrition and resignations, Bob was the only one left in the more technical group.

As a result of the downsizing, practically overnight Bob found himself in charge of nearly all the tasks an eight-person group had previously performed. He got about a week's worth of training from the former network manager.

"I didn't realize what a big job it was to manage the network. I didn't even know at that time what a bridge, router or switch was," Bob says. He was excited about the chance to learn networking, but there was no one else to handle the legacy systems or e-mail. About that time, he began having trouble sleeping at night.

"I was thinking this whole thing is going to crash, and it will be my job to fix it and I won't know how. I was a Cessna pilot being asked to land a 747, and I was reading the manual as we were landing," he says.

At the same time, upper management decided the now-solo Bob should be merged into the less technical IT group, with which he had not always had the best relations. With that came a new female boss and the expectation that he would move to an office in another building.

Now Bob had been doing pretty well, keeping his head above water learning networking and doing everything else he had to do. He had no desire to uproot himself from the office in which he'd spent 12 years. And maybe it bothered him just a little that his new boss was a woman who didn't have much technical expertise. So he refused to move.

"I was my own person, and I had my own kingdom. I loved this job then because I was in control of my own world," he says.

Until one day, when three men showed up at his office with some boxes and forcibly moved him. That was the first time he met his new boss — until then, none of her communication with Bob had been face-to-face. Talk about getting off on the wrong foot.

The first conversation they had, she ordered him to attend training that week at a location more than 30 miles away. She also told Bob he wouldn't be compensated for mileage or meals.

With all his duties, Bob was putting in a lot of hours, including handling the inevitable crisis calls on weekends. He soon got a nasty surprise: His boss didn't believe in comp time, saying he was salaried and had to work until the job got done. After several weeks, Bob called human resources for help, to no avail. Comp time was up to the discretion of management.

"That was when she decided I had developed an attitude problem," Bob says. The punishment: half-hour meetings with the boss at the end of each day, during which he has to recount his daily activities.

The situation has hit rock bottom. Bob is dying to quit but he's put in a lot of time toward a government pension and, as he puts it, "My wife won't let me quit."

He admits he is far from blameless, but seems helpless to help himself. So what can he do, short of walking out the door?

Expert advice

First and foremost, he needs to grow up professionally, says Victor Danevich, managing consultant at International Network Services in Burlington, Mass. "He needs to work out some personal things and decide which is better, making things work or losing his job."

Having said that, Danevich admits it sounds like the boss is trying to force Bob to quit. "If you're in a bad environment and you're in a spiral, it's time to move on," he says. But assuming there are compelling reasons to stay, Bob should try the following approach:

Get over it. Find a way to rise above the daily, petty battles. "He's got to get over his stubbornness," Danevich says.

Manage the manager. Bob should suggest that the daily meeting be moved to the morning. "He should say, 'I have nine hours a day to do my job. You should tell me what my priorities are for the day,'" Danevich says. That would make the meetings seem more proactive and less punitive. It should also cut down on some of the unpaid overtime, although Bob should expect to work roughly 50 hours per week.

Take it to HR. If the manager is not receptive to the idea of limiting his work week to 50 hours, Bob should go to HR and begin documenting his conversations. Fifty hours per week is about the industry standard for a network manager, and he should alert HR if his boss is routinely making him work more.

Don't forget the upside. Even Bob admits he has gained a wealth of new skills that will make him marketable when he moves to a new position. "They provided him with the opportunity to learn new skills. If you're never pushed, you don't learn," Danevich says. "With his combination of skills, he's going to be very attractive." If, that is, he can improve his people skills and attitude.

Paul is a freelance writer in Belmont, Mass. She can be reached at laurenpaul@sprintmail.com.

ADVICE FROM THE FORUM

Here are some reactions to Bob's nightmare work situation, from readers participating in the Management War Stories forum on Network World Fusion.

"Many of us will have to take direction from nontechnical people; we may be frustrated with their decisions. However, it sounds like [Bob] has taken some ego blows with the reorganization and has acted with impulsiveness and poor judgment. He can only change his behavior, not his boss."

Debbie Carraway, network and desktop computing consultant, North Carolina State University

"In World War I, both sides on the Western Front bloodied themselves to no good purpose in a grueling contest of attrition. Once the situation settled into trench warfare, no one was going to win cleanly. The best solution now is to get out of the situation."

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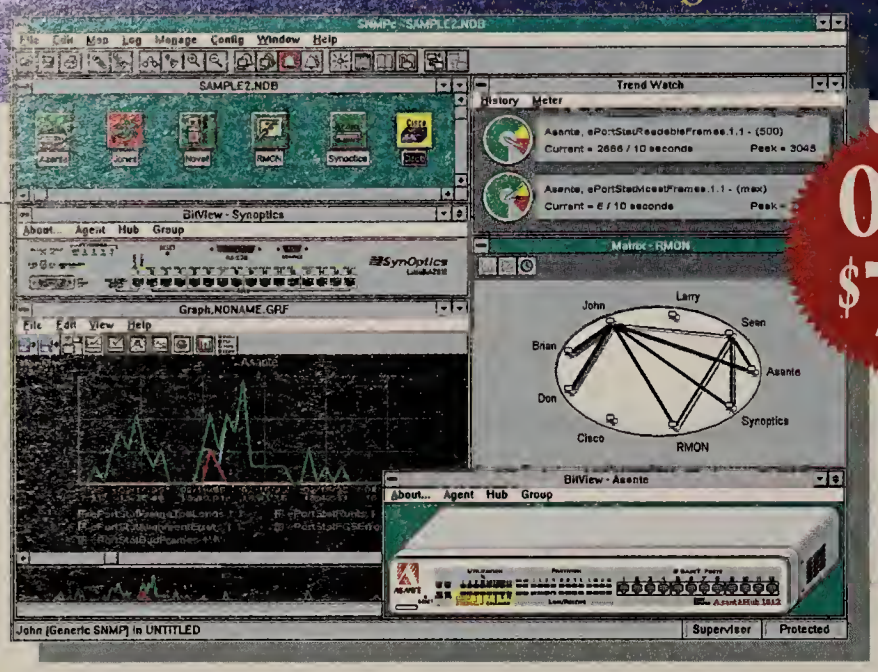

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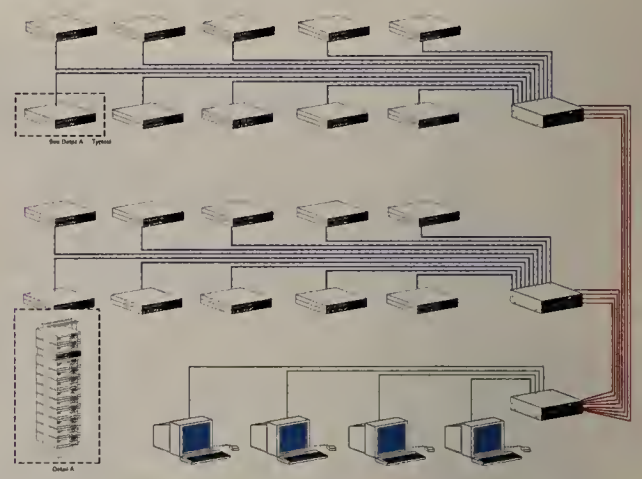

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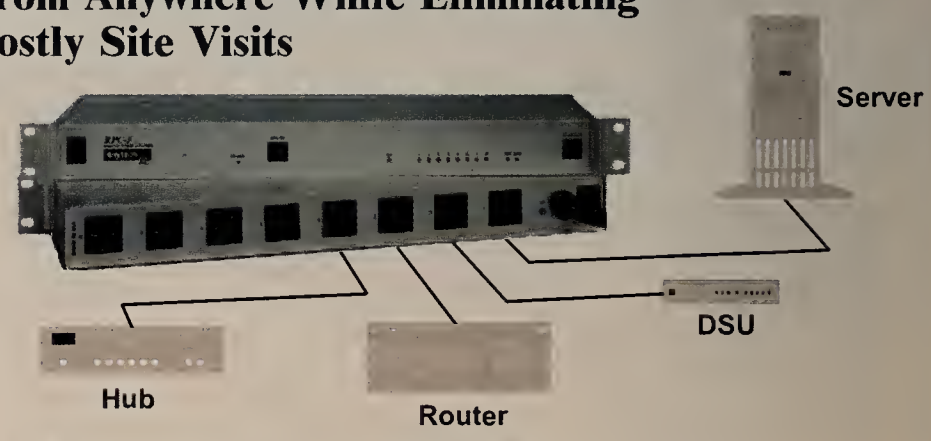

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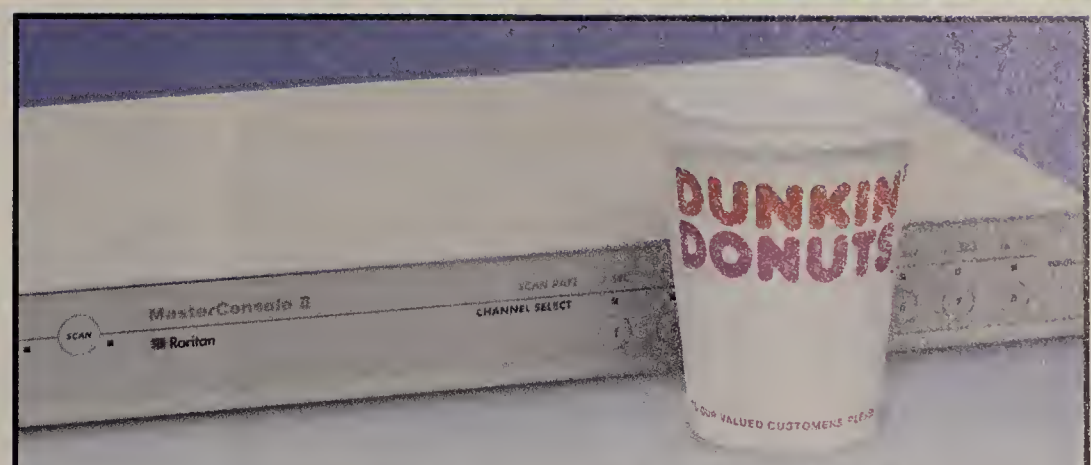

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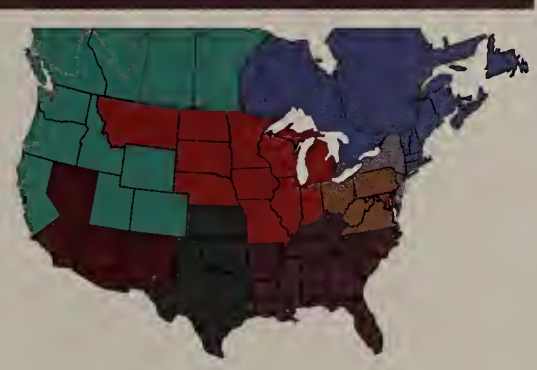

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Microsoft

Continued from page 11

Microsoft's activities with respect to those products will come under fire."

Eisenberg believes the feds may well go after Microsoft over Java.

The other antitrust suit

Caldera, founded by former Novell chief Ray Noorda, is also suing Microsoft on antitrust grounds. Caldera contends that Microsoft tried to destroy the market for DR-DOS by claiming the Caldera DOS-compatible operating system would not work well with Windows. In an amended complaint, Caldera is claiming that Microsoft used its Windows monopoly to squash DR-DOS.

The core of Caldera's complaint is that Microsoft bundled the still allegedly technically separate MS-DOS and Windows to create Windows 95, shutting any DOS rivals out of the market.

And of course, there is the now famous OS/2 bait and switch incident. IBM and Microsoft teamed up on OS/2, but then Microsoft began to back away in favor of Windows. Many software developers, including Lotus Development Corp., began to write for OS/2, while Microsoft focused on Windows. By the time Microsoft bailed out of OS/2, the company already had a solid Windows applications strategy, leaving Lotus in the dust.

Vapor wars

Vendors such as IBM have long been accused of using preannouncements to freeze the market and now Microsoft is on the vaporware hotseat. For instance, earlier this decade IBM and Apple Computer, Inc. formed Taligent, a company designed to build an object-oriented operating system far superior to Windows. Microsoft then began talking about an NT upgrade, code-named Cairo, that was to do everything Taligent promised. Despite years of promises, Cairo never came out in the form Microsoft described, and interest in Taligent dried up.

In 1991, a start-up called GO Corp. began showing off its pen-based operating system. Microsoft leapt into action, announcing plans to include pen support in Windows when the company had barely started the project, critics contend.

Lotus also felt the sting of Microsoft vaporware. Once Lotus Notes started catching on, Microsoft began talking about its upcoming Exchange groupware tool, a product that took so many years to ship that it worked its way through several code names. ■

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Tivoli

Continued from page 1

With that in mind, Tivoli plans to meld its enterprise management software with the service and help desk offerings of Software Artistry, Inc., which Tivoli acquired late last year (*NW*, Dec. 22, 1997, page 6).

Tivoli's strategy is to make the service desk a central control center for IT resource authorization, product deployment and problem resolution workflow, said Martin Neath, Tivoli's senior vice president.

PLANET TIVOLI

"Tivoli had great applications," Neath said. "But we didn't have process and workflow around [those apps]."

"We start off by defining a process," said David DeMarco, technology associate at Eastman Kodak Co. in Rochester, N.Y. "That tells us what we must do" with regard to systems management.

Tivoli this summer will unveil Tivoli Service Desk, an application suite that lets users track and resolve problems, set up change management workflow, keep tabs on IT assets and evaluate trends from a central console. These capabilities will be tightly integrated with the Tivoli/Enterprise Console and Global Enterprise Manager console, and will augment the event handling and application management aspects of each package.

Service Desk will also be tightly integrated with Tivoli's existing Inventory asset tracking tool and the company's other application management offerings, such as Tivoli Software Distribution, Distributed Monitoring and Remote Control, Neath said.

Tivoli's plans hit home with users. "This makes for a much easier interface going forward," said Diana Beecher, senior vice president and chief information officer at Travelers Insurance in Hartford, Conn. "Our expectation is to use Software Artistry on all help desks so everyone can have the same view."

Tivoli's service management strategy also includes a big role for the Service Desk's Decision Support software application. Decision Support collects data and transforms it into IT trend and analysis information. Tivoli envisions using Decision Support to mine through data collected by other Tivoli applications, such as the IBM Information Manager (InfoMan) change management software, in order to produce meaningful information on past problem resolution and product deployment experiences, Neath said.

To that end, Tivoli plans to unveil software modules, dubbed "decision cubes," for TME 10 3.6's applications. These will help users learn how to tackle IT problems using past experiences, Neath said.

"We can create end-to-end application management processes, including [data] capture and decision support," using these enhancements, said Jae Sun Lee, a vice president at Chase Manhattan Bank in New York.

Tivoli will publicly unveil the service management product roadmap within 30 days, Neath said. Shortly thereafter, Tivoli plans to ship TME 10 3.6, which will feature pervasive use of the Tivoli Management Agent, a "lightweight" TME framework that runs on everything from IBM ThinkPad laptops to IBM S/390 mainframes.

Systems equipped with the agent will let users download and configure Tivoli management applications with minimal manual intervention, said Tom Bishop, Tivoli's chief technical officer and vice president of development. The agent is intended to bypass the time, effort and cost of configuring tens of thousands of desktop computers for management, Bishop said.

Blue Cross and Blue Shield of North Carolina is expecting some NetWare management enhancements in 3.6 as well.

"There will be NetWare Loadable Module monitoring in [TME 10 3.6's] Distributed Monitoring [application]," said Jane Rigsbee, project manager at the insurer. "NetWare will be a fully managed node."

TME 10 3.6 will ship in August, Bishop said. It will be priced the same as previous versions of TME 10, which cost approximately $65,000 for the Tivoli Enterprise Console.

JEFF BLANTON

Eastman Kodak *Technology Associate David DeMarco said management-ready applications "are what we need to get to."*

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Cisco readies carrier gear

High-density T-1 access and 20G ATM switches to bow.

By Jim Duffy
San Jose, Calif.

Cisco Systems, Inc. is expected to announce at ATM Year 98 two new products that will be the first carrier-class ATM offerings to use the company's Tag Switching technology.

ATM YEAR 98

Cisco's new service provider-class products are code-named Wildcat and PopEye. Wildcat is a 20G bit/sec, 13-slot ATM switch based on Cisco's Catalyst 8500 architecture featuring carrier-class redundancy. PopEye is a high-density T-1 access concentrator that provides high-speed ATM access to switches and routers in the core of the Internet.

By employing Tag Switching, Wildcat and PopEye will ostensibly be able to scale the Internet to handle increasing traffic loads by steering IP packets onto ATM virtual circuits. Tag Switching does this by labeling, or "tagging," packets with short, fixed-length units of data that map flows to virtual circuits based on destination prefixes and addresses.

This helps scale the Internet by switching packets based on tag values rather than through full route table lookups.

With Tag Switching, analysts expect Wildcat and PopEye to give competitive offerings from FORE Systems, Inc. and Ascend Communications Corp. a run for their money in carrier nets.

PopEye is intended to drive a stake into the heart of the Ascend 9000 and 550, said one industry analyst. And PopEye will compete with products from start-ups that make low-speed concentrators connecting T-1 to the OC-12/OC-48/OC-192 ports on core routers. "There will be a huge demand for high-density T-1 concentration as an adjunct to the new class of super routers," the analyst said.

PopEye will handle up to 960 digital modems and support 1,000 channelized T-1s, sources said. The uplink interface will be OC-3, and PopEye will sport a 40G bit/sec backplane by mid-1999, sources said.

Wildcat is expected to support 128 OC-3s, 32 OC-12s and eight OC-48s. The box will have "1+1" switch fabric redundancy in which the redundant fabric can handle the full switching capacity should the primary fabric fail, sources said.

Wildcat features the MMC Networks, Inc. AnyFlow chipset. This is software-programmable silicon that makes wire-speed switching decisions while simultaneously providing per-flow queuing, packet/cell internetworking and multicast capabilities, MMC claims.

Wildcat is expected to ship in early 1999, while PopEye is expected to ship in the third quarter of 1998. Pricing could not be learned by press time. Cisco declined comment. ■

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Unisys - Unisys, in alliance with Microsoft and Intel, offers **Aquanta** and **ClearPath** servers designed to bring "mainframe class" scalability, availability, and manageability to the world of open platforms. Unisys leads the way in enterprise NT servers.

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Satellite

Continued from page 1

Brandon missed pages about an authentication problem in California that was blocking users from dialing in to the company's network. Had he known the pagers were down, Brandon said he would have called to get his messages periodically.

"I live and breathe by the pager for everything from circuit reports to router reports to network events," he said. "I have monitoring systems configured to page me if a [network equipment room] starts to overheat. If the temperature in a room climbs to 90 degrees, I'll get paged."

And if that happens, timing is critical — somebody has to get to the remote site quickly because extreme heat shuts down the routers, causing severe traffic problems on the network.

From now on, Brandon said team members will have to keep their cell phones on at all times.

This is a policy Dwight Gibbs, chief technical fool at online financial advisor The Motley Fool, Inc., already has in place.

"My team has to keep their cell phones on at all times . . . except when they are at their desks charging them," he said. "Pagers are too limited. On a cell phone, at least you can contact someone and talk to them immediately."

He said the reliance on pagers for network managers started about five years ago when cell phones were cost prohibitive. "Cell phones are so cheap now, there's no reason not to use them."

For Brad Williams, senior telecommunications analyst at Pier 1 Imports, Inc. in Fort Worth, Texas, alerts via a cell phone would have at least allowed him to leave his desk. Instead, Williams said he was "chained" there last week, monitoring e-mail alerts.

The pager outage — the first of its kind, according to wireless experts — started last Tuesday when a PanAmSat, Inc. satellite, the Galaxy IV, lost its orientation to Earth.

This problem resulted from a failure in the satellite's onboard processor and backup system. The processor keeps the satellite pointed toward Earth, according to PanAmSat.

tomers have been offered an alternative [to the Galaxy IV]," said a PanAmSat spokeswoman. "Some customers had backup agreements that allowed them to immediately switch over, and others are in the process now of reconfiguring their antennae to point to Galaxy III-R."

She said the likelihood of this type of accident happening again is slim. Only 1% of the satellites that have been sent to

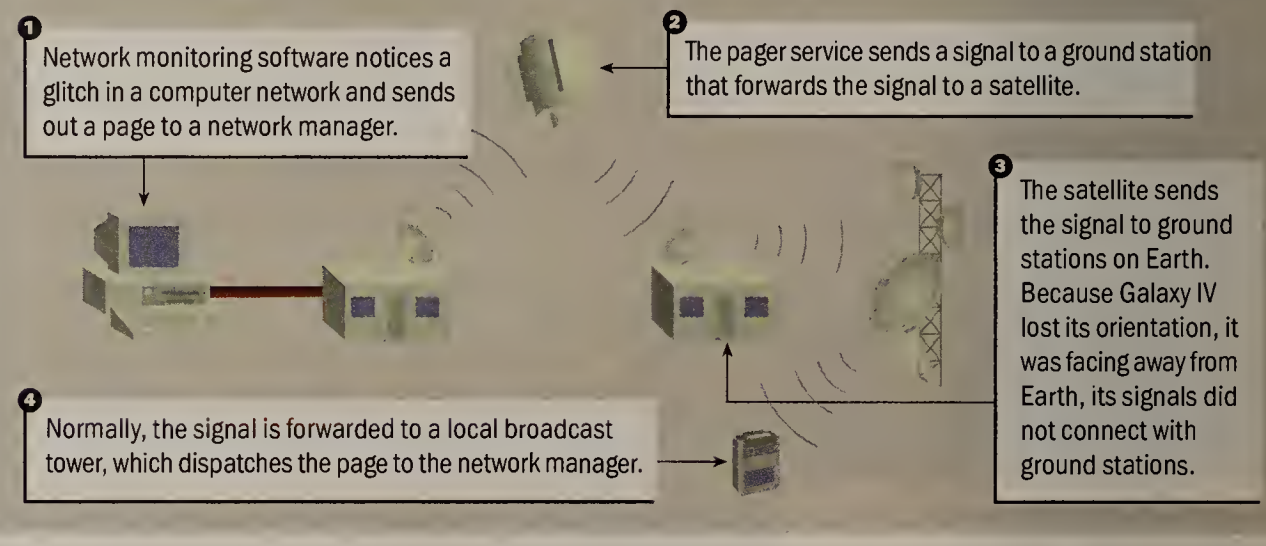
working. "Net managers hadn't realized how vulnerable we are. We'll be spending some time thinking about the alternatives [to pagers]."

"This outage proves that people should invoke more than one method of alerts to more than one person," said T.M. Ravi, vice president of enterprise marketing at Computer Associates International, Inc.

CA makes network monitor-

Death of a pager system

More than 80% of the estimated 45 million pager users in the U.S. were receiving their satellite signals from Galaxy IV, a satellite owned by PanAmSat. When Galaxy IV failed last week, network managers that rely on pages for network event alerts were left out in the cold. This is how the system works and what went wrong.



The Galaxy IV will not be restored, PanAmSat said. Instead, the company is switching traffic to the firm's Galaxy III-R satellite and considering other backup plans. However, some pager companies have already redirected their traffic to other vendors' satellites.

"Almost all our pager cus-

space in the past five years have been lost. She would not comment on payment penalties with which the company might be faced.

"Almost every network in the world is making use of pager notifications," said Rodney Joffe, vice president of strategic technology at GTE Internet-

ing software that can automatically alert network managers via pagers, phone, e-mail or fax.

Ravi said pagers are fine for less critical notifications, but as a problem escalates, other means of communication should be used to contact appropriate personnel, including cell phone calls and e-mail. ■

Hannaford

Continued from page 1

stores involved in the landline net. He could reposition the dishes at each store to point to a new satellite or accelerate his ATM upgrade. Homa chose ATM. Rather than wait weeks to install ATM, Homa forced the issue and got his broadband connections up in three weeks, finishing up this past Friday.

Unfortunately, the other Hannaford stores had dial backup or no backup at all. For those with no backup, the company had no choice but to tilt each of their satellite dishes toward another satellite. Homa found that it was actually quicker to install the new ATM services than it was to adjust all the dishes.

"We just swap the router, plug in the ATM edge device, put in the cables and we're out of there. It takes about 15 minutes, maybe less," Homa said. Moving the satellite dishes required an engineer and took about two hours for each store, he said.

Much of the provisioning for the ATM switchover was done in the company's centrally located lab. LAN routers for each store were upgraded with more memory and the latest version of Cisco Systems, Inc.'s Internetwork Operating System.

At the store, upgraded routers were swapped for the existing ones, and a second edge router was installed between the LAN and the ATM wide-area link, he said.

Hannaford was in the process of replacing the satellite network because the company needed more bandwidth, and satellites could not supply it. "Satellite [services'] downfall is it is not scalable, and, as it turns out, it's not all that reliable either," Homa said. ■

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AT&T

Continued from page 8

performance over time.

Available now, Frame Relay Plus comes to market this week as AT&T is expected to finally file its frame relay SLAs — providing penalties for network outages, missed repair intervals and excessive latency — at the Federal Communications Commission.

Tom Noone, AT&T's data services marketing director, said that despite AT&T's massive frame relay outage on April 13 and 14, the SLAs will remain as originally announced in January.

They were due in March but were delayed because of internal legal reviews, Noone said.

Users will only get the SLAs if they have at least 20 PVCs with AT&T as well as file installation orders and trouble tickets on AT&T's new Web-based Order Manager and Ticket Manager system.

But the Frame Relay Plus system performs this work automatically, Noone said.

Analysts said AT&T is moving quickly to stem possible defections from its frame relay system following its network meltdown last month.

Noone said Frame Relay Plus would not have alleviated the outage but would have helped users know when each circuit went down and came back up. Ultimately the service will help AT&T and users document SLA performance more precisely in the future.

Noone conceded that Frame Relay Plus will come at a premium above AT&T's normal frame relay port and PVC charges.

The exact rate within the $50 to $200 range of surcharges depends on the level of service chosen, the speed of the frame relay connection and the length of the user's contract, he said.

It may take some doing to get users to pony up the extra money. "I think it should be built into the service and the price," said Ron West, former president of the Communications Managers Association, a user group, and senior manager of telecommunications and office automation at the New York law firm Shearman & Sterling.

But Noone noted that at least the monthly fee structure enables users to install the monitoring and reporting capabilities of Visual UpTime without an upfront expense.

When bought directly from Visual Networks, list prices for the ASEs are $1,195 for a model appropriate for a 56K bit/sec frame relay connection and $3,595 for a T-1 connection, plus $17,995 for the PAM server.

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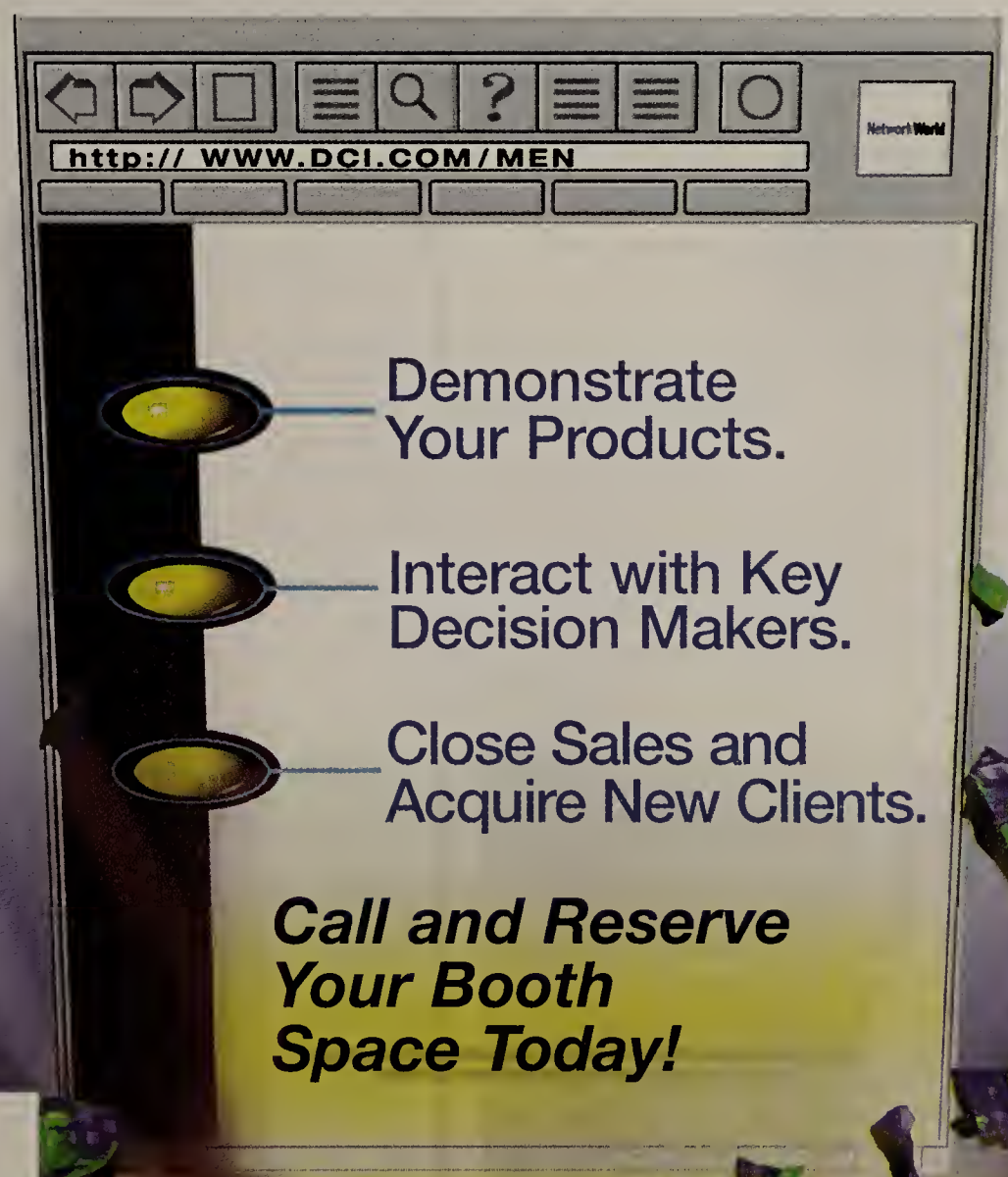

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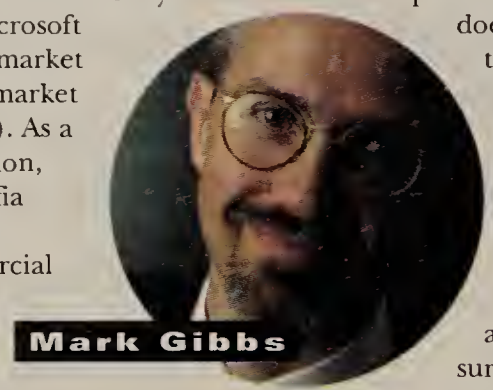
Backspin

Is Sun admitting a pretender to the throne?

If I were to ask you which computer company is synonymous with ISP computing infrastructure, you would say what?

Sun Microsystems, right? Visit any large ISP and all you see is wall-to-wall SPARC equipment running Solaris. Why? Because Sun products have the edge in scalability and reliability.



We all know Microsoft wants to own this market (and every other market it conceivably can). As a step in that direction, the Redmond Mafia last June released Microsoft Commercial Internet System (MCIS) 1.0.

Designed to win over ISP accounts, MCIS included MCIS Mail (Simple Mail Transfer Protocol/Post Office Protocol 3-based), MCIS News (Network News Transport Protocol), Internet Locator Service, Personalization System, Content Replication System, Address Book, Membership System and Merchant Server.

The latest version of MCIS, Version 2.0, was announced May 6 in Las Vegas. That same day Sun sent out an e-mail message to industry journalists saying, "Don't write your MCIS story without asking the hard questions," and then proceeded to suggest those questions.

For example, Sun proposed asking Microsoft to supply names of companies using MCIS 1.0 today, asking what they are using it for and how many users they are supporting.

So I gave the chaps at Microsoft a call and we went through the list. The answer to the above question is a whole slew of post, telegraph and telephone administrations worldwide. KPN Telecom in Holland, for instance, uses MCIS to support 350,000 users.

Microsoft reluctantly took a stab at "How many NT servers running MCIS 2.0 does it take to support one million users in a real-world environment?" The answer: one four-way SMP 200-MHz Pentium and two 200-MHz Pentiums for Lightweight Directory Access Protocol service. (I find that hard to believe unless a significant number of users are dead.)

Microsoft rightly balked at some of Sun's more obvious spin questions, such as "How can MCIS claim to deliver 'enterprise-strength' solutions when Microsoft and Gartner Group have publicly stated that NT is not ready for the enterprise?"

Having had enough of Microsoft, I called Sun and asked, "What is your point?" Sun said, "Microsoft doesn't understand what it takes" to succeed in this market. For example, Sun said ISPs want a command-line interface while Microsoft is pushing its MCIS graphical user interfaces as a way to ease administration. (I'm not sure I agree with that.)

Sun also said ISPs won't like Microsoft's royalty-based pricing for MCIS. While royalty-based pricing lowers upfront costs, Sun said it tried that a year ago and ISPs balked at the "hand-in-the-pocket" pricing strategy.

I see Sun's point, but I wonder whether their characterization of the market is still true. It certainly was true a couple of years ago, but today's ISP world is different. More than ever, being an ISP is a numbers game, and cash flow is central to survival. If the upfront costs can be spread over a longer period and ISPs can reduce staff and administration overhead better with MICS than they could with Sun gear, then Microsoft's strategies may well win out.

I find one thing curious about this incident: By raising this issue and not arguing real cases, Sun would seem to be responding to what it must see as a serious threat to its market ownership. This is a bad tactic for any company. Sun is attacking Microsoft not with specifics but with marketing issues.

Worst of all, what Sun is doing is admitting there is a pretender to the throne. I think we all suspected that was the case, but having Sun admit it is something altogether different.

What do you think? Should Sun be worried? Is Microsoft a threat to one of Sun's traditional market strongholds?

Your opinions to nwcolumn@gibbs.com or (800) 622-1108, Ext. 7504.

'NET BUZZ

The latest on the Internet/intranet industry

By Chris Nerney

NO POINT TO THIS IPO Initial public offerings (IPO) of stock are a lot like comedy, and not just because many IPOs are laughable. In both cases the key to success is timing.

Push technology pioneer **PointCast, Inc.,** which recently announced plans to go public, has plenty of timing. Unfortunately, it's of the bad sort.

Just one year ago PointCast was one of the darlings of Silicon Valley, with a permanent slot on the short list of hot Internet start-ups. It was the first company anyone mentioned when push – a technology by which information is automatically transmitted directly to users' desktops – was discussed.

However, by last fall the push market was dead, the victim of unimpressed customers and the integration of free push software by **Microsoft** and **Netscape.**

Why didn't PointCast go public last year, when push still had a pulse and the company's "mindshare" had more value? Because the Internet IPO market had cooled, and PointCast executives opted to hold off.

Why is PointCast readying an IPO now, when the company's star has dimmed and its immediate earnings outlook is, shall we say, uninspiring?

Because the Internet IPO market has rebounded, and because the debt-ridden company needs money. PointCast hopes to raise around $235 million by selling 4.3 million shares at about $11 each.

While the IPO should help PointCast's cash flow, it won't guarantee the success of the company's advertising-based revenue model. Like many content aggregators (**Yahoo, Lycos, Infoseek**), PointCast offers advertisers "eyeballs." In PointCast's case, eyeballs refer to viewers on corporate desktops who subscribe to the vendor's news and information delivery service.

The trouble is, PointCast can't keep customers. The attrition rate is astounding.

According to the company's S-1 filing with the **Securities and Exchange Commission,** the number of active PointCast viewers has stayed at about 1.2 million for the past year. But PointCast has registered between 850,000 and one million new viewers in each of the past five quarters. Just taking the low figure, that's more than four million new viewers since late 1996.

In its SEC filing, the company says interviews with former viewers revealed that poor performance and stability issues were behind the enormous turnover rate.

Those kinds of problems, presumably, can be fixed. There's another, less fixable reason why PointCast loses customers: The novelty of having news pumped to your desktop quickly fades.

It happened to us and everyone we know who tried the service. After a few weeks we simply got tired of the information overload, even when it was stuff we signed up to get. Within weeks we simply uninstalled the software.

Having PointCast on your desktop is like having a billboard shoved in your face every time you return to your monitor. That's why users got tired of push, and that's why PointCast's IPO is a shaky bet.

VALICERT SCORES VENTURE FUNDING Electronic commerce infrastructure start-up **ValiCert, Inc.** has received $6.1 million in venture funding from a number of investors.

The Palo Alto, Calif., firm sells software and services for validating digital certificates, which are designed to ensure secure communications and commerce over the Internet, intranets and extranets.

Participating in the venture round were **August Capital; Bessemer Venture Partners; Draper Fisher Jurvetson; Intel Corp.; U.S. Venture Partners;** and several private investors.

LOSING THE RHYTHM, FINDING THE GROOVE When last we heard from **Ray Ozzie,** the so-called "father of Notes," last fall, he was leaving **Lotus' Iris Associates** business to start his own company, **Rhythmix Corp.**

Well, Rhythmix is history, replaced – in name, anyway – by **Groove Networks.** We can't tell you why the company was renamed, because neither Ozzie nor **Jack Ozzie,** brother and co-founder, were able to get back to us.

Groove, based in Beverly, Mass., is developing Internet-based client communications software to complement e-mail, the World Wide Web and Lotus Notes.

PointCast may bore us, but we never tire of having readers send us their best Internet- and intranet-related news. Contact Chris Nerney at (508) 820-7451 or cnerney@nww.com.

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